VOL. XV MAY, 1925 No. 5

MAY 4 1925

AMERICAN JOURNAL OF PUBLIC HEALTH

THE JOURNAL *of the* AMERICAN PUBLIC HEALTH ASSOCIATION

RENDERING ACCOUNT
Frost

CONTAGIOUS DISEASES
Craster

STUDY OF EIGHTY-SIX CITIES
Palmer, Platt and Walker

MALDEN STUDIES IN HEALTH EDUCATION
Turner

NEXT ANNUAL MEETING—ST. LOUIS, OCTOBER 19

Published monthly at 372 Broadway, Albany, N. Y.
Address Editorial Matter to 370 Seventh Ave., New York City

Subscription Price, $5.00 per Year
Single Copies, 50 Cents

Membership, $5.00 per Year
Subscription Included

RABIES VACCINE

(Pasteur Method)

For the prevention of Rabies

THE GILLILAND IMPROVED MAILING OUTFIT

This treatment consists of twenty-one doses sent in three installments of seven doses each. Complete directions for administration are enclosed with each installment.

The Gilliland package is planned so that the physician meets no difficulty in the administration of the individual dose.

Telegraph your orders to our Marietta offices. Initial doses, numbers one to seven, inclusive, will be forwarded immediately by special delivery mail. Subsequent doses will follow to complete treatment.

A special discount is given to State and Municipal Boards of Health, and like Institutions.

THE GILLILAND LABORATORIES

Incorporated

Producers of Biological Products

MARIETTA, PENNA.

U. S. Government License No. 63

Entered as second class matter at the post office at Albany, N. Y., March 7, 1923. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized March 3, 1923

American Journal of Public Health
Official Monthly Publication of the American Public Health Association

VOLUME XV MAY, 1925 NUMBER 5

EIGHTY-SIX CITIES STUDIED BY OBJECTIVE STANDARDS

GEORGE T. PALMER, DR.P.H., PHILIP S. PLATT,
W. F. WALKER, DR.P.H., FELLOWS, A.P.H.A.
Division of Research, American Child Health Association

IN THE CAMPAIGN for child health a wise generalship will seek the facts which may be called upon as allies as well as those which must be counted as foes. Therefore, to ascertain the child health promoting activities, or their absence, in a representative cross section of American cities of moderate size, the American Child Health Association undertook a survey in the winter and spring of 1924. The smaller cities had not claimed any such attention as had marked the larger cities whose public health departments were surveyed by the American Public Health Association in 1920. Our knowledge of their health practices, public and private, was exceedingly fragmentary. What was needed was a bird's eye view revealing elevations and depressions, an insight into the relative preparedness of one community as compared with that of another in its health campaign. The information was necessary if the Association was to promote child health in the most effective manner.

SURVEY OF 86 CITIES

The survey was consequently restricted to the 86 cities with populations ranging from 40,000 to 70,000. Thirty-one states were represented. As child health is indissolubly bound with the general health of the community, the survey necessarily embraced the larger field of public health. Some 84 separate topics, covering over 1,000 items, were prepared in the form of a schedule, every question being made as objective as possible. The organized provisions for health work and definite accomplishments such as would lend themselves to comparison, were sought rather than a detailed description of methods.

The testing of the schedule, the selection of surveyors and the general description of the survey were briefly recounted in the February number of this JOURNAL.*

NEED OF A MEANS OF COMPARISON

From the beginning, the question of the method of summarizing and interpreting the multitude of facts in each city was given serious thought. The first step was taken by the surveyors themselves who were asked to prepare at the termination of each survey a descriptive account of the official and unofficial health work, giving their own evaluation of the work. The summaries proved to be of unusual

* Pages 102–106.

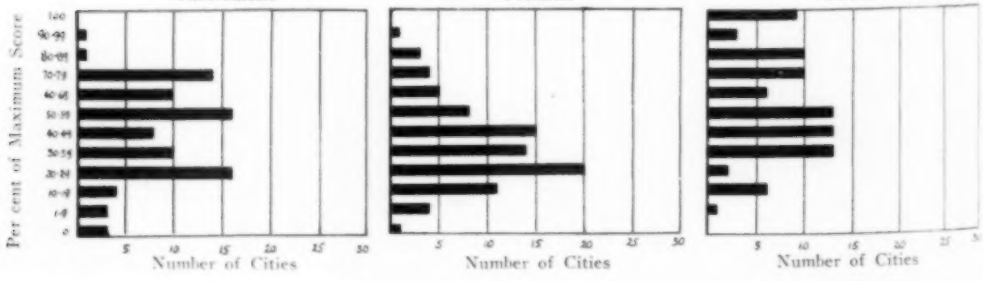
value in giving color and personality to the survey, but they still did not afford an objective basis of comparison. The usual method of expressing the accomplishment of a group of cities in any definite activity, such as clinic or nursing visits, in terms of the arithmetical average, had a definite value as a basis of comparison for the attainment of any particular city. But the relation to the average practice needed to be expressed in some more definite way than a mere statement of the two sets of figures. Was there not some way by which a number of practices functionally related to a public health activity, like prenatal hygiene, for example, might be measured individually in a given city, then grouped together and compared in this respect with the achievement of another city? Similarly, could not the achievement of a city in all of the branches of public health be measured and the total result used as an index of the public health activity in that city as compared with some other city?

DEVELOPMENT OF AN APPRAISAL FORM

The development of a score card or measuring rod was clearly indicated if such means of comparison and analysis were to be attempted, and before the completion of the survey such a tool was being worked out by the Research Division of the American Child Health Association based on standards and relative values. Shortly, the work of Dr. W. S. Rankin, Field Director of the Committee on Municipal Health Department Practices of the American Public Health Association, in further developing a set of standards for appraising city health work first proposed by Dr. Charles S. Chapin, came to its attention. It was apparent, therefore, that any set of standards devised for studying the survey data must take into account a wider field of usefulness because the undesirability of two sets of standards was obvious. The harmonizing and consolidating of these two sets of standards was undertaken and there soon resulted a single expression of standards and values. This statement of standards and values was then modified in a measure to meet the interests of other large national unofficial health agencies, namely, the National Tuberculosis Association, the American Social Hygiene Association, the National Organization for Public Health Nursing and the National Health Council. A final and most important revision was then made in the appraisal form by representatives of three state and sectional groups of health officers in the course of a four-day conference, in which the items were again altered and given the sanction of professional group judgment. While immediately applied to the survey data, the tentative character of the approved form for general use was fully recognized, and there was a general desire to give it a year of experimental use by many people before considering its revision.

APPLICATION TO THE 86 CITIES

The measurement of the health activities in the 86 cities by means of the Appraisal Form was carried out in about one month. Eighty-three items, covering



in a representative way all the major public health activities, were scored for each city and the sum of these scores represented the total score attained by the city. The standing of the 86 cities is shown in Fig. I, without revealing their names. The scores vary from 235 to 792, on the basis of 1,000 points as a maximum. Such a comparison of the achievement in health work, public and private, of one city with another, expressed in a scale based upon accepted standards and relative values, throws new light upon the study and understanding of health work.

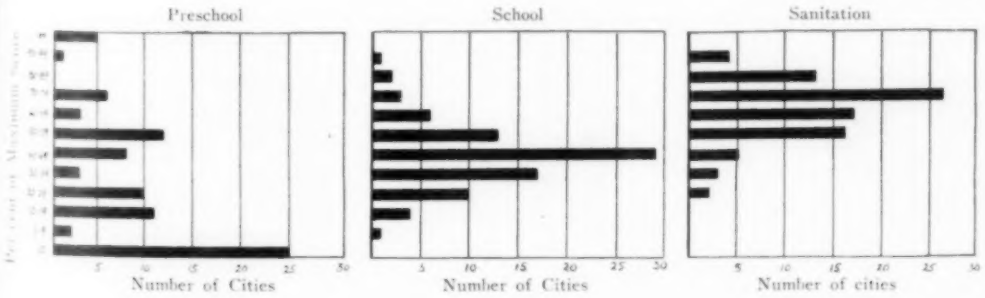
The existence of these scores at once raises the natural question in the mind of every health officer, and indeed every intelligent citizen in these 86 cities: "Where does my city stand?" It lies within the power of every health officer, by rating his own city to answer this question for himself. The American Child Health Association does not consider it desirable to publish the exact scores of the cities as determined by the rating schedule in its present tentative form.

It is interesting to remark here that the ranking of the cities in order of health promotion as made subjectively by each surveyor for his particular cities at the close of the survey and before he had any knowledge of the rating schedule, is in remarkable agreement with the ranking of the cities as established later by the rating schedule.

The next step in the analysis of the health work in these cities was to divide the 86 cities into a group composed of the 29 cities having the highest total scores, a group of 29 having the next highest scores and a group of 28 having the lowest scores. The average scores of the three groups were 619, 499 and 372, respectively. When the average attainments of each group of cities for each of 11 major public health activities are represented graphically the picture is that shown in Fig. II.

There are many observations that might be made about the picture of public health which these composite polygraphs present. It is easy to see, for example, that the attainment is over 50 per cent of the maximum score in 8 of the 11 activities for the upper group, in 5 of the 11 of the middle group and in but 1 for the lowest group. Furthermore, certain activities like infant hygiene, sanitation and the laboratory service are shown to have consistently the higher averages, while preschool hygiene and popular health instruction trail the procession. When, on the other hand, the highest third of scores for each major activity are averaged separately, a very much more promising idea of the state of development of each activity is obtained. The contrast between the best achievements and the worst is striking. The best selected scores average 73 per cent of a full credit while the poorest selected scores average 21 per cent. What is shown for the different groups of cities is only a composite of what each city shows.

The Appraisal Form makes it possible for any health officer to prepare a similar polygraph of the health work in his



community and to compare it with the average attainment of the smaller cities as shown above. In his use of the Appraisal Form in measuring different activities, the health officer may be reminded of a certain similarity of purpose and effect which it has in common with the spectrometer of the physicist and astronomer.

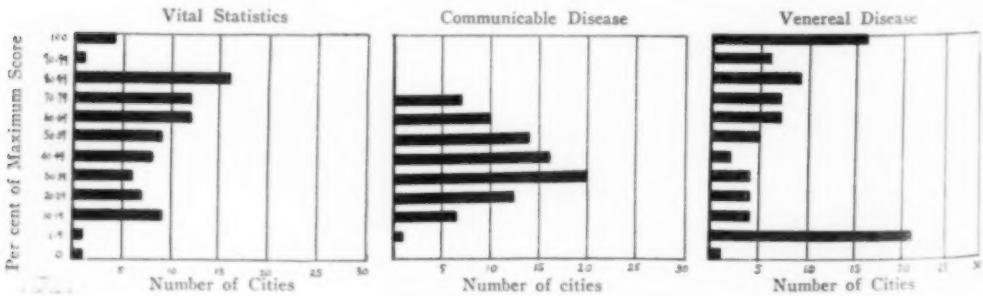
STATUS OF CERTAIN HEALTH ACTIVITIES

The understanding of the development of health work in these cities received a new clarification when each city's score for a given activity, after being changed to a percentage of the maximum score, was charted so as to show the number of cities scoring 100 per cent, 90 to 99 per cent, 80 to 89 per cent, and so on. Such charts are presented on several of the pages of this article and reveal unique, graphic pictures of the state of development of the 11 major activities in the 86 cities. To illustrate, the middle chart, at the bottom of this page shows the development of communicable disease control. In this activity the highest score (in per cent) is but 77 per cent, although 6 other cities fall in the group between 77 per cent and 70 per cent.

The distribution of cities shows some activity in every city in this important measure, although one city scores less than 10 per cent. However, the fact that the modal point (that of greatest frequency) is low—between 30 and 39 per cent—indicates, on the basis of the standards set up, the small amount of work done in the majority of the cities. It is believed by some that in the case of communicable disease control the modal point of the curve is too low and that this is due to the setting up of too high standards of achievement in the rating schedule. Individual users, however, differ in their opinions on this question.

When we consider the distribution of scores in sanitation, on the other hand, we obtain a more favorable impression of the status of this activity. Sanitation, which includes control of general nuisances, water supply, sewerage, milk supply and the supervision of other foodstuffs, is probably the oldest of the public health activities. It is not surprising, then, to find that all of the cities of this group attain at least 25 per cent of a perfect score, and that 50 of the cities attain 70 per cent or better. Four cities reach 90 per cent or better. Comparing this distribution with our general impression of the state of development of the activity, we find a close agreement which speaks well for the choice of items and the standards adopted for this activity in the Appraisal Form.

The distribution of the scores received in popular health instruction shows clearly how weakly developed is this service as judged by the six criteria established in the appraisal for judging this activity. Over half the cities received less than 20 per cent of the full credit that is regarded as only a reasonable effort. This is probably in accord with the facts. The scoring of organized effort to protect the health of the school child likewise shows mediocre attainment by the majority of cities, which conforms to the impression gained by the surveyors. High attain-



ment, however, is also shown in a few cities. Prenatal and preschool hygiene present a somewhat similar development. Vital statistics, tuberculosis and infant hygiene show a more even distribution of the cities throughout the entire range of accomplishment. The control of venereal disease is characterized by a considerable number of cities attaining a full credit, while a similar number receive little or no score. The laboratory service presents an exceptional picture which probably indicates that there is room for improvement in the standards or values assigned to this service in the tentative rating schedule.

So, for each activity the distribution curve may be compared with what is believed to be the state of development and if there is wide divergence the items of the schedule must be studied individually and the items or standards modified until the distribution curve does agree with what sanitarians generally admit to be the degree of development of the activity.

ONE CITY COMPARED WITH OTHERS

A very simple device which has aided materially in visualizing the relative status of each city in respect to each of the 11 major health activities, without divulging the actual score obtained, has been a diagram (not reproduced in this article) upon which is indicated whether the city for each of the 11 activities falls in the upper, middle or lower third of cities, as determined by the rating schedule. At a glance the general status of a city's health work may be seen. Here is a city standing in the upper third in 10 activities but in the lower third in preschool hygiene. In other cases the situation is just the reverse. By a few key numbers the type of organization responsible for the activity is also expressed in the diagram.

OTHER USES OF THE APPRAISAL FORM

While the analysis of the municipal health work in the 86 cities was being carried out by means of the Appraisal Form, a number of health officers were discovering other uses which were far in advance of the possibilities that were conceived for it at the beginning and it may prove interesting to briefly mention here some of these additional uses. No attempt has been made to learn of all the numerous interesting uses to which it has been put; so that the enumeration of a few experiences that have come to our attention probably do not exhaust the possibilities.

In several cities it has served as a brief for the budget request of the department of health. In one instance, the result was that the department of health was the only department of the city government to receive an increase (amounting to 14 per cent) for the coming year. In another instance the department of health was the only department whose budget was not reduced. It has been interestingly used by several health officers as a basis for their future health program, and even as a check-up of their monthly activities. One health officer is incorporating in the annual report of his health department the detailed rating of his city for the 83 items included in the schedule, with discussion of those ratings which he be-

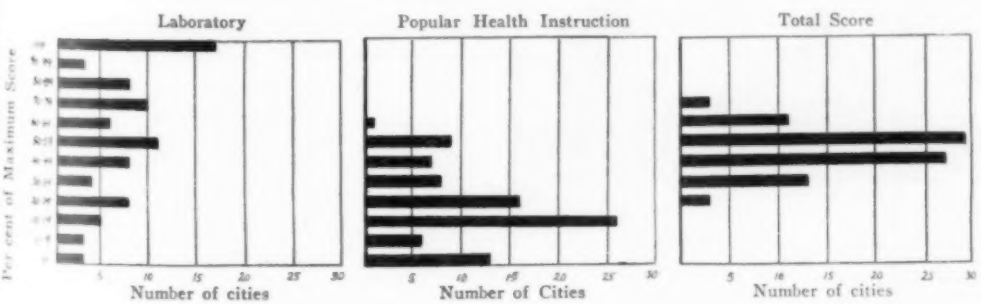
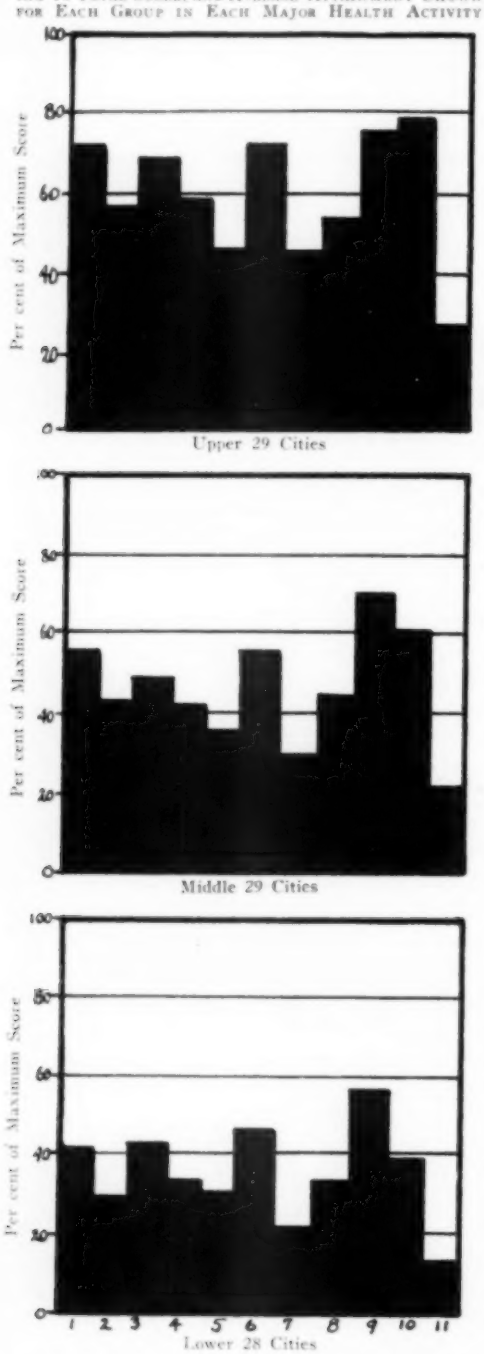


FIG. 1

EIGHTY-SIX CITIES ARRANGED IN THREE GROUPS ACCORDING TO TOTAL SCORE, AND AVERAGE ATTAINMENT SHOWN FOR EACH GROUP IN EACH MAJOR HEALTH ACTIVITY



1—Vital Statistics. 2—Communicable Disease. 3—Venereal Disease. 4—Tuberculosis. 5—Prenatal. 6—Infant. 7—Preschool. 8—School. 9—Sanitation. 10—Laboratory. 11—Public Health Instruction.

lieves call for an explanation. In another city the mayor, upon happening to learn that his city ranked low in diphtheria prevention and that full credit could be secured at a cost of $175 for toxin antitoxin, undertook to make the sum available at once from special funds.

Other mayors and chambers of commerce have been awakened to a new interest in their cities' health work after comparison of their own rating with those of other similar cities. Its value in developing a new sense of inter-dependence of all health agencies on each other was brought out when a study of its health work, as revealed by the rating schedule, resulted in the formation of a joint health committee in which all agencies were represented under the leadership of the health department.

The rating schedule brought to one health officer for the first time the realization that he should coöperate with the department of education in its health work if his city was to secure the fullest return from its health activities. School medical inspection was promptly started.

Finally, state departments of health are reported to be using the rating schedule in special health surveys of their cities. Three large state departments of health are definitely known to be rating their 111 cities in this manner.

FINAL REPORT OF THE SURVEY

The preceding sections which deal with the findings in the 86 cities are but brief, general conclusions resulting from careful study and analysis of the surveys. The report of the survey which will be published during the summer will show in some detail the public health practices in these cities, both as individuals and as groups. Having in mind the fact that comparisons with average performance of the whole leads only to mediocrity, the average achievement of those 29 (one-third) cities showing greatest activity in each item has been set up as a reasonable standard of attainment.

In addition to this discussion of find-

ings, there is presented a plan of organization for the health activities of a city of 50,000 which is believed to be not an ideal to be looked upon as a Utopia never to be realized, but as a very comfortable half-way house which a city by concerted effort and definite planning may easily attain in three or four years, and from there be able to proceed by comfortable stages to a more advanced position.

Only as the importance of public health work is realized by the public at large and their representatives, and the reasonable goals which public health strives for are more generally understood, can we expect our cities to grow to the healthfulness which even now awaits them.

As for the Appraisal Form, sound scientific revision of it, periodically undertaken and based upon facts collected from a large group of representative cities, will unquestionably show progress and improvement in the schedule and its application, which will eventually produce an instrument of great and recognized value in public health work. As a contribution to such revision and for the assistance of the group of health officers organized to develop and revise the Appraisal Form a detailed analysis of the standards and relative values is now being made by the Research Division of the American Child Health Association in the light of its experience.

WHERE DOES YOUR CITY STAND?

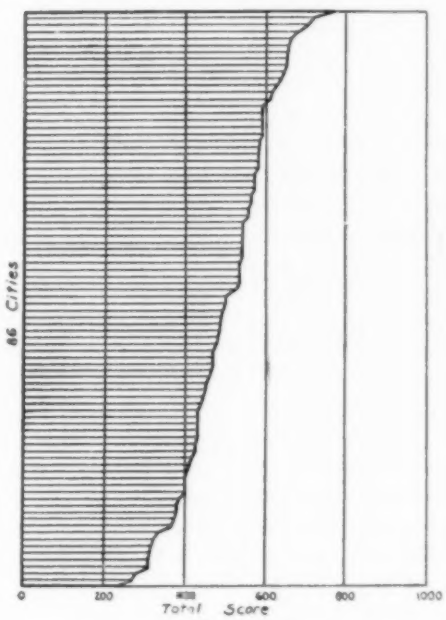


FIG. II

EIGHTY-SIX CITIES ARRANGED IN ORDER OF SCORE ATTAINED

RENDERING ACCOUNT IN PUBLIC HEALTH*

W. H. FROST, Fellow A.P.H.A.
Surgeon U. S. Public Health Service
Professor of Epidemiology, Johns Hopkins University School of Hygiene and Public Health

THE ACTIVITIES embraced within the scope of present-day public health work are so extensive and diversified that the health officer's task would be sufficiently difficult if he had only to organize and direct the work along lines already laid down defining its scope and distribution. This, however, is not all nor even the most difficult part of his duty, for he must first determine what activities he shall include, and what proportion of his limited resources he shall put into each.

With respect to this part of his duty the health officer occupies the position of an agent to whom the public entrusts certain of its resources in public money and cooperation, to be so invested that they may yield the best returns in health; and in discharging the responsibilities of this position he is expected to follow the same general principles of procedure as would a fiscal agent under like circumstances.

As various lines of activity are suggested to him by contemporary practice or urged upon him by special propagandists it is his duty to consider what returns are to be expected from each one and to decide how much of his capital he will put into each one. Since his capital comes entirely from the public, it is reasonable to expect that he will be prepared to explain to the public his reasons for making each investment, and to give them some estimate of the returns which he expects. Nor can he consider it unreasonable if the public should wish to have an accounting from time to time, to know what returns are actually being received and how they check with the advance estimates which he has given them. Certainly any fiscal agent would expect to have his judgment thus checked and to gain or lose his clients' confidence in proportion as his estimates were verified or not.

However, as to such accounting the health officer finds himself in a difficult and possibly embarrassing position, for while he may give a fairly exact statement of how much money and effort he has put into each of his several activities, he can rarely if ever give an equally exact or simple accounting of the returns from these investments considered separately and individually. This, to be sure, is not altogether his fault. It is due primarily to the character of the dividends from public health endeavor, and the manner in which they are distributed. They are not received in separate instalments of a uniform currency, each docketed as to its source and recorded as received; but come irregularly, from day to day, distributed to unidentified individuals throughout the community, who are not individually conscious of having received them. They are positive benefits in added life and improved health, but the only record ordinarily kept in morbidity and mortality statistics is the partial and negative record of death and of illness from certain clearly defined types of disease, chiefly the more acute communicable diseases, which constitute only a fraction of the total morbidity. It is as though the divi-

* Read at the Joint Session of the Public Health Administration and Vital Statistics Sections of the American Public Health Association at the Fifty-third Annual Meeting at Detroit, Michigan, October 23, 1924.

dends from financial investments were not received in cash but were applied at the source to reducing our bills. Finally, to add to the confusion in accounts, even the lump sum of all benefits properly credited to the health department's activities is not distinguished in this record from the benefits of similar kind which are actually due to other phases of social betterment or to the operation of natural biological forces.

To isolate from this aggregate the particular share which may be credited to any one activity is at best a more complex process than we ordinarily realize. It can never be accomplished by the exhibition of figures alone, but always requires that many facts be put together into a long train of reasoning.

To take as an illustration one of the simplest cases: A city which has for years been using a water supply highly polluted with domestic sewage, substitutes for this an unpolluted supply. Within a few months the prevalence of typhoid fever, which had previously been high for a long period of years, as shown by reliable statistical records, drops quite abruptly to a much lower level, which is sustained. The mere exhibition of statistics demonstrating that a "significant" decrease in the prevalence of typhoid fever has followed the improvement in the water supply does not at all warrant the conclusion that the reduced incidence of this disease is the result of the improvement in water supply. Before any such conclusion can be established it is necessary to bring in many other associated facts. First, there is the pertinent fact established by the records of other cities that a similar abrupt change in water supply has *usually* been followed by a marked decrease in the prevalence of typhoid fever, whereas such an abrupt decrease has seldom if ever been noted in cities which continued to use polluted water. Then it is necessary to bring in the whole theory of typhoid fever, that is to say, all the facts known about the disease, arranged in such orderly array that each fact bears a definite and rational relation to all the others. By virtue of this theory, and not otherwise, we may proceed to ascertain and demonstrate that no condition likely to greatly affect the prevalence of typhoid fever except the change in water supply has been altered during the period under consideration, an item obviously necessary to the conclusion.

The individual who goes through such a process of reasoning and reaches the correct conclusion may not actually have looked up the statistics of other cities or reviewed in detail the great mass of facts which are comprehended in the accepted theory of the causation of typhoid fever. He may not even have been conscious of taking all these facts into consideration. Nevertheless, they are essential to the reasoning, and he must have had them at least in the background of his mind and must have accepted them as previously established facts before he could justify his conclusion that the abrupt decrease in typhoid prevalence was the result of the change in water supply.

This somewhat tedious analysis is intended merely to illustrate the general principle that the demonstration that a known improvement in public health is actually the result of a specific measure is a complex process which involves putting together many facts. In the example cited, which is one of the simplest cases, where the actual effect is immediate, specific and well marked, it has been necessary to take into account not only the statistical record of local experience, extending back for some years, but also that of other areas where similar measures had previously been put into effect, and finally, to bring in the whole mass of facts embraced in our theory of typhoid fever, facts collected over a long period of years by clinical, bacteriological and epidemiological observation and carefully elaborated into a rational sequence.

A similar array of facts, in so far as they are available, must be used in any reckoning of the benefits of public health work, or in forecasting future results, ex-

cept that in the latter case the record of actual local experience is obviously lacking. Unfortunately, however, the facts are not often so complete nor their interpretation so simple as in this example. For instance, the measures taken may be more diversified and of more gradual application; the actual effect upon morbidity and mortality may be less specific, less extensive, or obscured by a trend due to other causes; it may be of a kind which is not directly recorded in ordinary mortality and morbidity statistics, or it may be long deferred.

Again, the theory upon which the action is based may be subject to question, or it may be very complex, as in tuberculosis, so that deductions as to the influence of any one factor may be uncertain. In proportion as the evidence is incomplete the conclusions must be modified either in certainty or in precision; yet conclusions which are correct in a general way may be derived from evidence which is quite fragmentary and inexact.

To illustrate this, our cities have in recent years instituted regular medical inspection of school children, with vigorous efforts directed towards remedying certain obvious physical defects. I am not aware that anyone has even attempted as yet to demonstrate the ultimate effect of this work by a statistical analysis of mortality or of morbidity from the commonly reported diseases. Indeed, we have no definite and compact theory from which to deduce just where the results of this activity might be expected to show in such statistics.

We may say, then, that we have neither a clearly defined theory nor adequate statistical experience to prove and measure the net result of this work upon the public health of any large community as a whole. This does not mean, however, that we are entirely without evidence that the work done actually produces good results, which in the aggregate are very considerable. On the contrary, we have the testimony of a multitude of thoroughly competent observers that in individual cases coming under their observation marked improvement in physical condition and in class-standing follows so frequently and so promptly upon the correction of physical defects or faulty habits as to leave no doubt that the improvement is actually the result of the corrective treatment.

By reason of the number and competence of those who relate these observations and the consistency of their experience, the evidence of beneficial results is sufficiently convincing; but it is difficult to present, because it must be assembled from many different sources, in many different forms, which cannot readily, if at all, be reduced to the statistical summaries requisite for quantitative statement. Until this "common experience" has been reduced to such definite and uniform terms as are adapted to statistical comparisons, which can be achieved only by carefully planned and systematically recorded observations, we must continue under the present handicap of being able only to prove (in part) the kind of results from these inspections, without being able to measure them.

If one undertakes to examine all the activities which are included in modern public health practice, with respect to the character and precision of the data upon which we must base our estimate of their effect, it will be found that those which are in good standing fall mostly between the two examples which have been cited.

Few public health measures have the combined support of such simple and unquestioned theory and such clear statistical evidence as may be adduced to demonstrate the benefits from improvement in water supplies. On the other hand, not many rest so largely upon unassembled "common experience" as is the case with school inspection.

What will perhaps strike one most forcibly in such a critical review is the inadequacy of the statistical component in the evidence. This is a serious defect, for while the facts expressed in a statistical record constitute only a part of the

evidence required, they constitute the part which can be most conveniently and forcibly presented and are essential to any quantitative statement of results achieved.

If we really desire to submit our judgment of what is being accomplished to this final test of statistical evaluation we must set about collecting statistics which will serve the purpose. This does not mean that we must merely accumulate more statistics of the same kind that we now have, but statistics of a different order, based on more detailed and exact observations of individuals and of circumstances, in order that we may convert what is now indefinite "common experience" into an orderly and flexible array of definite facts. Such statistics are not easily collected. They must be carefully planned in each case with a special view to answering some definite question, and must then be collected by painstaking systematic investigation, continuing often over a long series of years. To carry out such investigations in a sufficient number of sample areas is a large and difficult undertaking, but neither greater nor more difficult than is demanded by the extent of present effort in public health and the importance of the best possible evaluation. Moreover, it is work of a kind which may be done most economically and effectively by local health departments rather than by independent institutions for research, and must be one of the most important items in the future program of health department practice if this is to go forward on straightened lines.

One other consideration seems especially pertinent. It is that, in the absence of competent statistical evidence to prove and measure the efficacy of any public measure, we should the more carefully examine the theoretical evidence and common experience upon which it rests, and should base our judgment and advocacy of the measure upon this evidence rather than attempt to support it by statistics which will not stand criticism.

It is frequently easy to exhibit some figures which, though not really to the point, will nevertheless serve to impress an uncritical public, and the temptation may be great to give them, at least by implication, an unduly favorable interpretation. It is more difficult and more tedious to present the full argument, based on all the facts, and it is perhaps a little humiliating to admit that the statistical evidence is deficient because we have failed to collect it; but to do this is not only more scientific, it is in the end more convincing, and after all there is no free choice, because it is the only *honest* method, whether it be convenient or not. Finally, it is the only way of progress, for the first step towards collecting better evidence is to recognize the deficiencies of that which is at hand.

I believe that competent evidence can be adduced to prove that most, if not all, of the many activities which make up the practice of today rest upon a scientific basis which needs no defense beyond a full plain statement, and that those which lack this basis are inevitably, even though slowly, passing out of vogue.

I believe, too, that if we present our case in every instance on *all* the evidence; if we admit such weakness as we know exists, and if we conscientiously set about collecting more and better evidence, not to prove but to test the cases that are in doubt, then the practice of today has nothing to fear from criticism, and we who recommend it to the public need not be embarrassed if such accounting as we are able to render cannot always be expressed in exact figures at this time.

DISCUSSION

CHARLES V. CHAPIN, M.D.

Dr. Frost's earnest demand that the procedures of preventive medicine be placed on a firm scientific basis is well timed. Indeed, it would have been opportune at any time during the past forty years, and it is to be feared will be equally needed for forty years to come. At a time when there is so much talk about relative values in public health, it should be

brought home to us that it is even more necessary to establish absolute values.

Dr. Frost has traced the evidence as to the effectiveness of orthodox methods of typhoid fever control as a model for which we should strive when seeking to map out new work, or to substantiate the worth of present procedures. Not a little public health work is fully as well established as, for instance, smallpox vaccination, drainage for malaria, and the need for water purification to control typhoid fever. The author admits that there is much public health work being done which is justified by the facts, though exact scientific evidence is yet lacking.

I am very glad that Dr. Frost referred to school inspection as an instance, for it has always seemed to me that convincing evidence of real worth is lacking for much of the school health work such as dental hygiene or the removal of tonsils. For half a century or more medical men have been removing tonsils, sometimes for one reason and sometimes for another, but I know of only two or three serious scientific attempts to determine the results of such removal, and these are far from conclusive.

Reference has been made to the value of personal observation of individual cases repeated many times by many observers in determining the value of such procedures as enucleation of the tonsils. I confess to great scepticism as to the worth of such methods of appraisal. "Common experience" and "consensus of opinion" have dominated therapeutics from the beginning. Let us demand something better for preventive medicine. Let us find a firm foundation before building our superstructure and then we will avoid the kaleidoscopic panorama of changes which has been the history of curative medicine. In our search for this foundation, let us cling very closely to the high ideal so clearly set forth by Dr. Frost.

PROFESSOR C.-E. A. WINSLOW

I am not inclined altogether to agree with Dr. Chapin in his low estimate of the value of common consents, not that one should accept opinions merely because they are commonly entertained, but the fact that they are commonly entertained gives them, at least, a right to their day in court. For instance, ever since the time of the Greeks, it has been the common opinion among the medical profession and among the laity that sunlight is a good thing. We had the statistical evidence of that, but we had no sound theory about it, and it is only within the last five years that we have a scientific, rational, definite confirmation of its effects on rickets. So, I think common opinion is a thing we ought to take into account. Before it becomes science, of course, it has to be backed up by statistical analysis, and there is where the most of us differ when we come to consider the details of these problems.

Finally, there is a point that Dr. Frost made which I think should be emphasized, that after common consent has led you to investigate a probability, and you investigate it statistically and have what seems to you valid statistical evidence, then, I think you want to consider, as Dr. Frost pointed out, whether that statistical conclusion is probable in the light of all the evidence.

You get plenty of statistical facts that have no theoretical basis as yet. Take, for example, the summer prevalence of infantile paralysis. From what we know about the disease it ought to be a winter disease like the other nose and throat infections, not that it never occurs in winter but that in general it is a summer disease; and yet we have no theoretical basis. We will not accept those statistical facts.

If statistics indicate that measles predisposes to the development of latent diphtheria infection, as it does in pneumonia, it seems that that is inherently probable, but I am not quite sure whether that is the case, or whether the statistics indicate that measles in one year leads to a high diphtheria in the year following. That, on the other hand, would seem to me to be inherently improbable, and would need very much stronger statistical support for the theory that simultaneous, or practically simultaneous increases of these two diseases occur. But it is by such careful statistical conclusions from the facts that we are getting ahead, and I think it is enormously encouraging that all these problems are being attacked as they have been attacked. I do not think I remember a meeting of the American Public Health Association where there has been as much promise and sound work as has been presented during this past week.

NECESSITY FOR COMPLETING THE REGISTRATION AREA BY 1930*

WILLIAM H. DAVIS, M.D., FELLOW A.P.H.A.
Chief Statistician for Vital Statistics, Bureau of the Census, Washington, D. C.

BRIEFLY STATED, a "registration area" is that portion of the United States recognized by the federal government as having good laws for the registration of births and deaths and as having registration sufficiently good to warrant the collection and publication of the statistical facts. The standard of completeness required is 90 per cent.

Vital statistics 70 per cent complete may not be valueless, but certainly data 90 per cent complete afford a more reliable basis for deductions. Beginning with the census of 1850 attempts were made at each federal census up to and including that of 1900 to gather through census enumerators mortality data relating to the census year, in order to get a decennial cross section of mortality conditions. But this method was never satisfactory. The data were so incomplete that the cross section was never a true one. Dr. John S. Billings is authority for the following statement which appears in Vol. XI of the 1880 Census:

"The results of each of the four censuses in which an attempt has been made to ascertain the number of persons who died in the United States during the preceding year, have shown that the enumerators did not obtain and record more than from 60 to 70 per cent of the actual number of deaths."

So for the census year 1880 a "registration area" for deaths was begun, transcripts of the records on file in two states, the District of Columbia and 19 cities serving as the base for federal statistical compilations. In the census year 1890, the area of reliable registration comprised 8 states, the District of Columbia, and 83 cities in nonregistration states, and in the census year 1900, 9 states, the District of Columbia, and 153 cities in nonregistration states. Since that time there has been a steady growth of the death registration area until today it includes 39 states, the District of Columbia, 18 cities in nonregistration states, and the Territory of Hawaii, or in terms of population, 88.4 per cent of the population of the United States.

The birth registration area was first established in 1915 and now includes 33 states and the District of Columbia, or 76 per cent of the population of the United States.

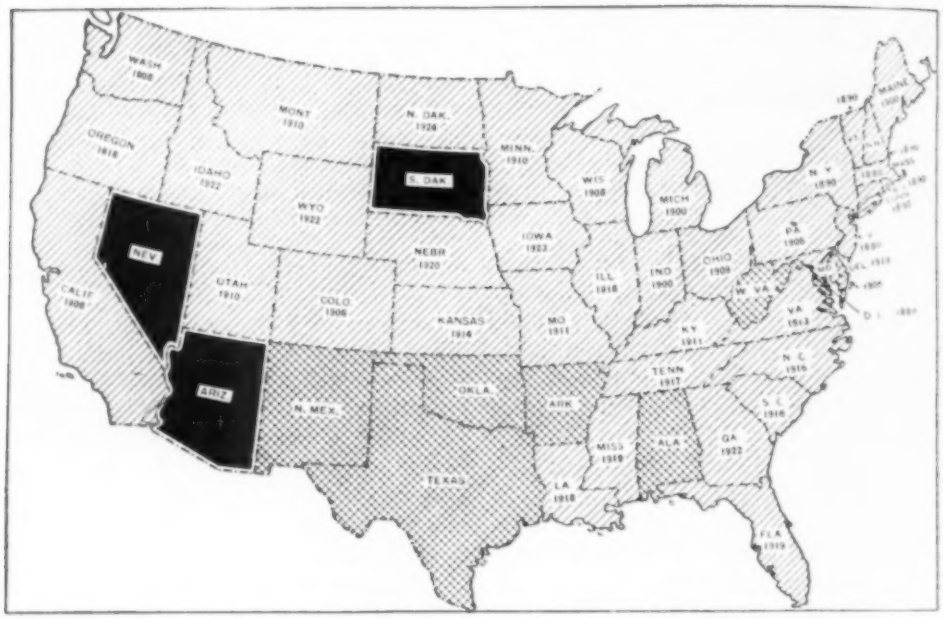
ADMISSION OF STATES TO THESE AREAS

States are admitted to the birth and death registration areas only after careful tests which show at least 90 per cent registration. Formerly these tests were made by obtaining from postmasters, rural carriers, and the clergy names of decedents in certain specified months. These names were then checked against the names on file in the official records of the state. If 90 per cent of the names thus gathered from the rural carriers and others were found on file the state was admitted to the area.

Recently some active registration officials have made use of postmasters, rural

* Read at a joint meeting of the American Statistical Association and the Vital Statistics Section of the American Public Health Association, New York City, March 6, 1925.

DEATH REGISTRATION AREA: 1925



PER CENT OF POPULATION INCLUDED IN THE DEATH REGISTRATION AREA

Year	*Per cent*	*Year*	*Per cent*	*Year*	*Per cent*	*Year*	*Per cent*
1900	40.5	1916	70.8	1920	82.2	1924	88.4
1905	40.4	1917	73.4	1921	82.3	1925 (March)	88.4
1910	58.3	1918	78.5	1922	85.3		
1915	67.5	1919	81.1	1923	87.6		

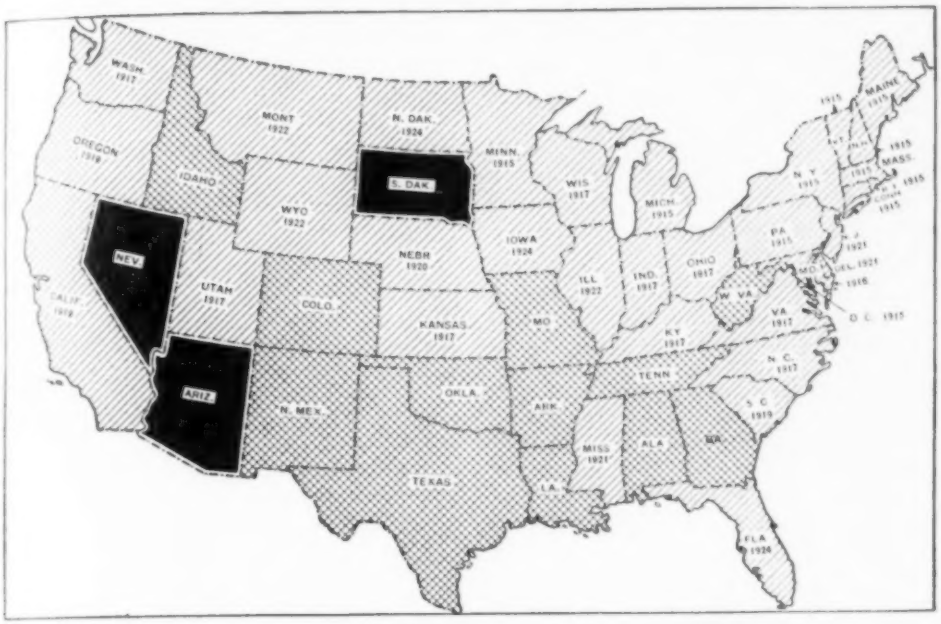
carriers, and the clergy in perfecting their registration, so that a new method of testing registration had to be devised. The post card method is now being used successfully. To illustrate: the Bureau of the Census through the postmasters and rural carriers will soon distribute 100,000 return franked post cards over all parts of West Virginia. Each householder who receives a card will be asked to fill in the name of any decedent in his family in the last twelve months with the date of death and mail the card to the Census Bureau. These cards will then be checked against the official records on file.

Retests of states already in the registration area are made from time to time to insure maintenance of the required standard.

GROWTH OF THE REGISTRATION AREAS

Many factors have contributed to the growth of these areas. Congress, in 1902, enacted legislation which made possible the continual collection by the Bureau of the Census of reliable data from states having good registration laws and good registration. Shortly after this, through the coöperative efforts of the American Medical Association, the American Public Health Association, the American Statistical Association, the Committee on Uniform State Laws of the American Bar Association, the Bureau of the Census and others, a good Model Registration Law was evolved and states which up to that time had more or less defective laws have gradually fallen into line, have improved their laws, have improved their

BIRTH REGISTRATION AREA: 1925



PER CENT OF POPULATION INCLUDED IN THE BIRTH REGISTRATION AREA

Year	*Per cent*	*Year*	*Per cent*	*Year*	*Per cent*	*Year*	*Per cent*
1915	31.1	1918	53.6	1921	65.3	1924	76.1
1916	32.5	1919	58.6	1922	72.2	1925 (March)	76.1
1917	53.6	1920	59.8	1923	72.2		

registration and have been admitted to the registration area.

The last war particularly centered all eyes on the need of complete birth registration, for it was necessary then to know how old individuals were and where they were born. More recently the Shepard-Towner Act has brought home the need of complete birth registration in order to measure accurately puerperal and infant mortality.

It would be too long a story to go into the development of the many aids to better registration; suffice it simply to give credit to:

1. The development of federal, state, city and other local health agencies.
2. The development of welfare societies of all kinds.
3. The extension of the welfare work of insurance companies.
4. The favorable attitude of the press, both newspapers and journals.

Though purposely having passed over the details of the work of these great coöperating agencies, I cannot forbear mentioning briefly two recent devices for improving registration.

(a) The Postmaster General has permitted state registrars to place conspicuously in post offices brilliantly colored posters. These posters tell *How Births Are Registered*, *How Deaths Are Registered*, and then give 20 reasons *Why Births and Deaths Should Be Registered*.

(b) In 33 states attractive certificates are now sent to recent mothers

informing them that their children have been registered. Naturally a mother who does not receive such a certificate asks why and this question leads to the registration of the birth of her child.

But in all this consideration of the registration area, one fact must not be lost sight of for a moment. The registration areas are examples of coöperative endeavor. The Director of the Census may have authority from Congress to conduct an enumeration of the population, or a census of agriculture, or of manufactures, or even to collect statistics of births and deaths, but he has no authority to demand copies of death certificates or copies of birth certificates. These data are gathered only through friendly cooperative effort, a fact which makes the wonderful growth of these areas a great tribute to the common sense and to the ability for coöperation which exist in the United States.

The names of those who should be honored in connection with the growth of the registration area are legion. Practically every health officer, every registrar and every welfare worker in the United States has had a share in this coöperative work.

The federal compilation of vital statistics may seem to some an unnecessary duplication of vital statistics compilations by the state and city registrars. Presumably the city registrar is so familiar with his own city that he can perhaps best weigh the facts presented for different sections of his city and can perhaps best interpret correctly the meaning of higher death rates in a certain borough, in a certain ward, or in a certain city block, and for this purpose the figures compiled by the city registrar may be adequate. Likewise the state registrar is in a position to interpret figures for the several cities and counties of his state and for this purpose the figures compiled by the state registrar may be adequate when his appropriations permit extensive compilations.

But for interstate comparisons and for comparisons of cities of one state with cities of other states, or for comparison of counties of one state with counties of other states, the figures compiled by the separate city registrars and the separate state registrars are inadequate, because certificates of death are not edited and cannot be edited in the same way in these widely separated offices. The editing of causes of death, which often involves the selection of one cause out of several certified by a physician, is such a complex matter that the only possible way to obtain the same sort of editing for all sections of the United States is to have that editing performed in one office by one group of editors.

It is true that separate compilations by all these separate agencies does involve considerable duplication of work, but under present conditions certainly much of this duplication is unavoidable, for the city and state registrars must tabulate their records immediately to satisfy the needs of epidemiologists and health officers, whereas the federal data based on transcripts of the original records is necessarily delayed for months. It may be that eventually for annual reports the city and state registrars will be able to avail themselves of tabulations already made by the Census Bureau, or it may be possible for the city or state registrars to pay the Census Bureau for special tabulations. In this connection I would add that photostat copies of some of the general tables are already being furnished gratis to several state registrars.

If the need of a registration area is clear it is but a short step to demonstrate the desirability of completing this area before 1930.

In this wonderful country of ours, with an area 50 times that of England and Wales, 14 times that of France, and with an aggregate population of 113,000,000 people, what glorious opportunities there are to work out the public health problems which confront the world. Forty-eight states, with many varieties of climate,

with many race stocks, with many occupations, and with many standards of living! What more could be asked for as a laboratory in which to solve these public health problems? And yet we cannot hope to get the full benefits from this laboratory until the entire laboratory is turning in its data, in other words, until every one of the 48 states is in the registration area.

Some of the southern states have been admitted to the registration areas comparatively recently, and some of their low death rates have been regarded with suspicion. Do these low rates represent actual conditions or are they fictitious? How satisfactory it would be if it were possible to check these low rates against rates in the neighboring states where similar conditions prevail. In former days many insurance companies looked askance at risks in some of the southern states and did little or no business in some parts of the South. This same situation prevails today, but of course to a less degree. How far is this timidity on the part of insurance companies justified? Let us cut the leaves of the registration book before 1930 and let us see what these uncut pages have to reveal.

Still other reasons suggest themselves for the early completion of these areas, such as (1) the possibility of presenting national figures and national rates based on the population figures of the 1930 census, and (2) the possibility of allocating deaths to the places of residence, as is done in England and Wales, and so producing more refined rates. But the principal reason for this drive now is to open as soon as possible all parts of this big public health laboratory of 48 states.

Not for a moment should we imagine that the reaching of this goal means a resting place for registration workers. It is but a milestone on a long, long road. Other milestones are already visible, such as, (1) 95 per cent complete registration, and (2) more accurate certification of occupations, and as these milestones are approached still others will appear.

It seems hardly necessary to point out that as this long campaign to perfect and complete the basic vital statistics data goes on the possibilities and probabilities of making correct deductions from these data will constantly increase. Therefore, whatever our special field of public health work, or in whatever direction our special interests extend, I think we can all agree that there is a great big task ahead for registration officials in the United States, and I am sure we can all unite in wishing them Godspeed. It seems a waste of time and opportunity to dwell further upon the necessity of every state in the registration area before 1930. If we all agree that such expansion of the areas is desirable, I wish to direct your attention to the second line of the slogan of the Census Bureau:

"Every State in the Registration Area Before 1930. *Your Help Needed."*

Your help is needed to reach the milestone on time. Only three states—Arizona, Nevada, and South Dakota—are held back by inadequate laws based on the county system of registration, where birth and death returns are transmitted from local registrars to county registrars and from county registrars to the state registrar. This system of relayed transmission of returns is unsound in principle and has repeatedly proved a failure. The state registrar only if in direct touch with each local registrar will be in a position to know whether he is receiving reports from every part of the state or not. The only exception which should be made to this idea of direct transmission of certificates is when a county health officer is under such direct control of the state board of health that the county man in registration matters may be regarded as an actual part of the central office.

Your help is needed, therefore, to create a popular demand in these few states for a revision of their registration laws. Attempts in this direction have already been made by federal and private agencies, but the very fact that the laws are still unsatisfactory is conclusive evidence

that *Your Help Is Needed*. Your help is needed to hammer home once more the old truths regarding the benefits of registration.

Lord Morley very aptly said: "Men are so engaged by the homely pressure of each day as it comes, and the natural solicitudes of common life are so instant, that a bad institution or a monstrous piece of misgovernment is always endured in patience for many years after the remedy has been urged on public attention. No cure is considered with an accurate mind, until the evil has become too sharp to be borne or its whole force and weight brought irresistably before the world."

In other words, it is not enough to point out the way once, twice, or thrice—the truth must be hammered home at every opportunity until the desired reform is secured. Your help is certainly needed. Most of the states outside of the areas have satisfactory laws but for one reason or another have been unsuccessful in bringing registration up to the 90 per cent mark. Among the factors which are retarding registration in these states may be mentioned, frequent changes in personnel following elections, inadequate appropriations, and lukewarm popular demand for the enforcement of the registration law.

I would not imply that your help is needed to control the ballot boxes of these states so as to prevent the frequent changes in personnel. Such changes seem to be inevitable. But your help is needed to awake a popular demand for adequate appropriations for proper registration, and to awake a popular demand for the enforcement of the registration law.

An earnest drive is needed through the daily papers, through the medical societies, through the weekly and monthly journals, through the clergy, insurance companies, mothers' clubs, and welfare agencies to awaken this popular demand. Of course, something has already been done in this direction, but your additional help is needed. A little extra push from a new quarter may make all the difference between failure and success.

Moreover, there is one little point which I wish to emphasize particularly, the present seems to be a very opportune time for the completion of this work. The people still remember the war; the Sheppard-Towner Act is still in force, and the Bureau of the Census, through its mothers' certificate blank, is now in a strong position to maintain good registration in a state which, through special efforts and through special drives, has been able to reach 90 per cent registration and to enter the registration areas. The time is ripe! The iron is hot!

EVERY STATE IN THE REGISTRATION AREA BEFORE 1930

Ten years ago Dr. Cressy L. Wilbur said: "The most important duty of the federal registration service and of all its coöperating agencies is to extend the registration area for deaths until it includes the entire United States, Alaska, and all our insular possessions.

"A 'registration area for births' should be established at the earliest practicable moment and every effort be made to extend it until, with the 'registration area for deaths,' it embraces the entire population under the American flag."

Today the vital statistics goal is "*Every State in the Registration Area Before* 1930." Let us make the dream of national vital statistics a reality. The next census will be taken in 1930. By that time let us make it possible to compute a national birth rate and a national death rate. Nine states still remain outside of the death registration area and 15 states outside of the birth area. West Virginia and Alabama are already knocking for admission to the fold. These states will be tested before June 1. *Your Help Is Needed* to bring the others into line. Let us all work together for the goal.

NOTE: Since the presentation of this paper, a telegram, dated March 17, has been received by the Census Bureau from the State Registrar of Vital Statistics of Arizona announcing the enactment of a good vital statistics law for that state.

MALDEN STUDIES IN HEALTH EDUCATION

A Preliminary Report

C. E. TURNER, Fellow, A.P.H.A.

Associate Professor of Biology and Public Health, Massachusetts Institute of Technology

IN HEALTH as in religion there is no direct correlation between knowledge and action. Admittedly we are living far below the hygienic standard made possible by our scientific knowledge. And yet we have never instituted a general and systematic program for *training* people in the correct habits of living.

These considerations led the Massachusetts Institute of Technology to develop some five years ago a plan for experimental study in health education within a school system. At that time the Institute had just added work in health education to the studies in public health and the training of sanitarians, which it had already been carrying on for over twenty-five years under the leadership of Professor William T. Sedgwick. The plan was incidentally the last detailed research procedure which the staff was privileged to work out with its beloved chief.

OBJECTIVES OF THE STUDIES

Many questions pressed for answer. Can health be taught? Would it be practicable from the standpoint of administration and the results obtained for the public schools of America to add a systematic program of health habit training to their health activities? Can this be made as natural as training in politeness and courtesy? Can such a program sufficiently motivate the school child to cause an actual improvement in his habits of living? Can it provide a means of proving to the child during the growing and habit-forming period that the way he lives affects the way he feels? Would such a program of health education sell itself to the average community without any investment of outside funds? What methods are best? We are agreed perhaps upon the advantage of such a program in its probable effect upon adult life, but will it produce a measurable improvement in the health of the child? Our proposed studies sought to answer some of these questions.

CONDITIONS OF THE EXPERIMENT

Beginning in September, 1920, and continuing for a six-month period the writer carried on a small experiment in one of the fifth grades in Somerville.[1] During this period there was developed a happy acquaintance with the health education movement of the Child Health Organization as it was being promoted under the able direction of Miss Sally Lucas Jean and the inspiring leadership of Dr. L. Emmet Holt, and also with the excellent program for health education being developed in the primary grades of Newton, Mass., under the direction of Assistant Superintendent of Schools Mabel S. Bragg.

At the end of the Somerville experiment, it was desired to test the health education procedure under critical circumstances with a larger group of children, but there was no money for this study. Upon the advice of the Commissioner of Education for Massachusetts,

Dr. Payson Smith, the plan for the experiment was placed before Superintendent F. G. Marshall of Malden, an able and practical school administrator, progressive in the adoption of new procedures of real merit, but critical enough to demand that new procedures stand the test of experience.

The Malden School Department agreed to pay the salary of a young woman who should carry on the work of a health education program in two school buildings, and Miss Georgie B. Collins was secured to undertake this work. We wished to give health education a fair but critical trial. It was agreed that only one-half hour a week in each class should be given to health work and that the only request to be made of the room teacher was that she turn over her class for this length of time. Furthermore, it was agreed that, should health education interfere with school work and meet the disapprobation of teachers and parents, we would discontinue the whole project upon two weeks notice. We were to work in health habit training only; the medical and nursing services were to continue without change.

We elected to work with the middle grades because these children have a more definite and critical reaction to a new school procedure than do primary children, because a change in habits at this age is more significant and because the methods of working with children of this age had not received so much study as methods for primary grades. We began work with three fourth grades, three fifth grades and three sixth grades in two school buildings (Faulkner and West), selecting as an *observation* or *control* group the two fourth grades, three fifth grades and two sixth grades in two other school buildings where the children seemed most comparable.

An advantage of this method of procedure lay in the fact that—provided the work proved sufficiently practicable to be allowed to continue—the special teacher could install a habit training program more promptly by working directly with the children than would be possible for a supervisor of health education who works entirely through the teachers. The experiment was also unique in that, since no funds were brought in from outside, it was an attempt to see what a typical American community could do for itself in the way of health education.

METHODS

The successful health education program makes the child *want* to do the thing that he should. The most powerful factor in motivation is the distinctive opportunity of the public school to apply group judgment to health procedures. The child is deeply influenced by the commendation of his teacher and the judgment of his classmates. Call it the "principle of group psychology," the "force of public opinion," or "style" or "what the neighbors will say"—we are all susceptible to its influence. With this powerful agency the school can materially aid the home in the health training of the child. As the mother of one of our boys said "George will do things for the teacher that he will not do for his father."

Health in the abstract makes no appeal to the child; it must be interpreted in concrete terms. It must have the delightful elements of play. The training must be positive and not negative, a program of *do's* and not *donts'*. All of the activities must be adapted to the natural interests of the child at the various ages. The ideal program is unified and arranged in sequence so that there is something of newness and freshness in each grade.

To the mind of the child, growth is perhaps the best concrete symbol of health. Sanitarians and physicians have, however, sometimes failed to distinguish the *educational* use of growth records from the diagnostic value of measurements for underweight. Such an educational use exists, and the only justification necessary for interesting a child in his growth as a measure of his mode of living, in the correlation between right living

and right growing, lies in the fact that a well child grows faster than a sick child; that growth is a normal and reasonably continuous process throughout childhood, and that the same child with suitable food, proper rest, exercise and cheerfulness will grow faster than he would with an improper mode of living.

This is not the place to discuss health education methods in detail. We have tried all of those procedures which have been suggested and such devices of our own invention as seemed to hold promise.

Our children were weighed monthly and measured three times a year. The children who were more than 10 per cent underweight enjoyed the privilege of a special "health habit conference" with the health teacher in order to determine what habits were wrong and to enter more promptly upon their correction. Gradually the room teachers have voluntarily taken over these conferences and in addition they have correlated health with the other school activities and have undertaken countless projects adaptable to their particular grades. After one year the program was extended to all the grades in these two buildings.

In a recent report secured from the teachers, we requested them to number certain activities in the order of their importance in securing health improvement. The general consensus of opinion of the twenty-five teachers placed these devices in the following order of importance: (1) Classroom teaching, (2) weighing and measuring, (3) individual work with underweight children, (4) morning inspection, (5) scrapbooks, posters and similar devices, (6) competition, (7) correlation. Each of the first four activities mentioned was regarded as of first importance by one or more of the teachers, but there was widely diverse opinion as to the importance of each procedure. The writer, perhaps, would have placed them in another order of importance, but the reports clearly indicate that no one educational method or device is most important in the eyes of all teachers. In health education as in other procedures the program must not be too rigid to allow for individual initiative.

Various methods have been tried and according to their success they have been maintained, abandoned, or revised and tried again. Our fifth grade program of study based upon three years of experimental work was published in 1924.[2] Other contributions in methods are soon to appear. Meanwhile students in the one-year health education course at Technology [3, 4] and in the summer courses have taken positions in the development and supervision of health education programs until there are already more than 100,000 children in the United States who are being trained in health under their direction or supervision.

ESTIMATING RESULTS

Various methods have been suggested for measuring the results of a health education program.[5, 6] Our data on this subject may be included under four heads.

1. *Direct observation* of improvement in certain habits is possible by classroom inspection.

2. *The opinion of the people concerned* is a valuable criterion. Some human factors in life, the effect of the acceptance of Christianity upon the quality of human character for example, are not measurable by the precise units of the metric system. Education nevertheless recognizes the existence of such forces, and in any case a health procedure must seem worth while to the school people if it is to be accepted as a general public school procedure. Reports from the teachers, principals, nurses and physicians have been secured, as well as data from parents and children. All of these reports from teachers and pupils were unsigned and every precaution was taken, and we believe successfully, to secure frankness of expression.

3. *Individual health records* for particular children provide information as to the child's general health, nutrition, and the quality of his school work.

4. *Group records of growth* are naturally sought as a possible index of health improvement. In the experimental group monthly weights to the nearest quarter pound were made and heights to the nearest quarter inch were taken three times a year. At these three periods the relation of each child to normal weight according to the Wood standard was computed. These detailed data were continued over a two-year period for the experimental group. In the control group, height and weight were taken during the first year and weights were taken during the second year at the same times as those for the experimental group. Measurements were taken in shoes because it did not seem safe to jeopardize the success of the whole experiment at the beginning by requiring the removal of shoes for weighing. Otherwise all measurements were taken in accordance with the most careful and standardized technique.[7] Weighing was done in the lightest indoor clothing and was carried on at the same period of the day at each measuring. The measurements during the second year were taken in the corresponding weeks. Every computation of a child's relationship to normal weight was made upon the basis of height and weight taken at the same time, and age to the nearest birthday.

PRACTICABILITY PROVED

At the beginning all of the class work in health education was done by Miss Collins. At the present time the grade teachers are voluntarily doing most of the health education work themselves. (This is as it should be because the classroom teacher for many psychological, strategic and administrative reasons must be the cornerstone of the health education program.) They believe that health training is a normal part of school teaching and have indicated most interestingly which activities they would carry on should they be transferred to a school system where there was no systematic health education program. In answer to the question as to whether "some children have improved in school work as a result of better health habits" eighteen of the twenty-five teachers said "yes." The others indicate that their classes have been with them but a five-month period and that it is too short a period in which to judge school improvement in individual children. The average judgment of those teachers who indicate a definite percentage is that 44 per cent of the children have shown school improvement as the result of health education. The suggestions, criticisms and constructive work of the teachers in developing this program have been most valuable.

One cannot paint a picture of the human factors and the human interest in such a program. In describing the enthusiasm which has been developed, he seems to effervesce. If he neglects the human factor he seems to do an injustice. One has to go to Malden to see that side of the story. The important fact is that the program has "sold itself" and the school department will extend the health education program to all schools of the city at the beginning of next fall term.

EFFECTS UPON SCHOOL ACTIVITIES

Health education is a procedure to supplement not supplant other school health activities.[8, 9] It improves the attitude toward physical examination and the correction of physical defects. Thanks to an excellent corps of nurses the percentage of physical defects corrected among these children was unusually high. But more significant is the following statement from one of our nurses: "I made three home visits to George Blank's house last year in an attempt to persuade the family to have his tonsils removed. Imagine my surprise the other day when George came to me without any renewed activity on my part to say that 'Mama says if you will make arrangements for me to go to the clinic, I can have my tonsils out next Friday afternoon.'"

HABIT IMPROVEMENT

It is well known that campaigns to improve cleanliness and posture among school children yield definite results. We would have done well to have recorded the number who fell below a certain standard in both of these respects when our campaign began and again at the present time. Such observations *were* made in a campaign to reduce the amount of nail-biting. In six typical classes of approximately thirty-five children each, there were sixty-one children whose nails were badly bitten. Subsequent inspections a year later showed that forty-one of these children were cured of the habit.

For some years the Malden schools have encouraged underweight children to bring twenty-five cents each week for a daily milk and cracker lunch at recess. Without any special campaign the number of children using milk increased from 150 to 285 within the first year of our work, and it has remained at about that figure. This represents an increase in the number of children taking milk from 16 per cent to 30 per cent. The average percentage of children taking milk in the other schools is 17. About 7 per cent of the children in the observation or control group have milk at school.

In 1924 the following letter signed by the grade teacher and the health teacher was sent to 300 parents:

"Dear Parent: Health teaching was organized at the Faulkner and the West schools nearly three years ago as a new aid in improving the health of the children. We are anxious to know to what extent health teaching has been carried into the home life of the child. If you are willing to help us by giving the information requested below, we shall appreciate it."

Eighty per cent of these questionnaires were returned. Three or four were not filled out but carried some such statement as "I approve of all this." But 233 of these questionnaire letters were filled out completely by "yes" or "no" answers. There follow the questions and the judgment of the parents as to results:

Is your child:

Going to bed earlier? Yes 129. No 104.

Spending more time out of doors? Yes 198. No 35.

Keeping himself more clean? Yes 196. No 37.

Brushing teeth more regularly? Yes 146. No 87.

Drinking more milk? Yes 169. No 64.

Eating more vegetables? Yes 176. No 57.

Eating more fruit? Yes 194. No 39.

Eating more cereals? Yes 103. No 130.

Eating less candy between meals? Yes 156. No 77.

Eating foods which he had refused before? Yes 141. No 92.

Standing and sitting in better posture? Yes 149. No 84.

Has your child improved in health appearance as shown by bright eyes, clear skin, good color, etc.? Yes 177. No 56.

Do you think there has been a real improvement in health? Yes 186. No 47.

Have you noticed improvement in any of the following ways as a result of better health: More cheerful and good natured in disposition? Yes 151. No 82. More completely rested in the morning and willing to get up promptly? Yes 150. No 83. Better appetite? Yes 171. No 62.

In June of 1924 a questionnaire comparable to that used by the American Child Health Association in the survey of 86 cities, was given to 322 children who had had health teaching and who were then in the seventh and eighth grades and to 226 children of the control group. It was explained to the children that they were to record their health habits for the previous day and not to indicate what they usually do. The unsigned reports appear to be frank statements. From these data the table on the next page is prepared.

It should be stated that this was the third year of our experiment in Malden and that training in particular health habits had been established by teachers in many classes in the control group. Many of these children mentioned in their report the special campaign in their class for more sleep and less coffee. In one

of these control classes which at the time was having a special campaign on going to bed earlier, the number of children having more than ten hours' sleep the night before was 60 per cent of the class. In comparing these data with the fifth grade figures of the A.C.H.A. survey, it should be recalled that our figures are taken in June two years later in the life of the child.

CHILDREN'S HABIT QUESTIONNAIRE—JUNE, 1924

	Expt'al Group Grades 7 & 8	Control Group Grades 7 & 8	A.C.H.A. Data 86 Cities Grade 5
Percentage with more than 10 hours sleep ...	49%	46%	47%
Ate 2 vegetables beside potato ..	56%	46%	....
Drank no milk..	21%	30%	20%
Brushed teeth ...	73%	74%	71%
Ate candy between meals ..	29%	44%	....
Drank tea	16%	23%	....
Drank coffee	22%	20%	38%

We asked all children to write on the back of their questionnaire the health habits which they had improved during the last three years. In the health education group 3 per cent of the children said they had made no improvement in health habits. In the control group 23 per cent of the children recorded no improvement. The preceding table gives the percentage of children in each group who in their own estimation had improved in the various respects mentioned.

HEALTH IMPROVEMENT

If the reader has been engaged in health education work he will recognize that this training program does not *slightly* raise the health level of *all* children, but rather produces *distinct* benefits in many children. Every one of our twenty-five teachers answered in the affirmative the question "Do you think that health teaching has been an aid in actually improving the health of some of the children?"

Many individual cases could be cited in which the child, who was pale, thin, and tired, has improved his diet, increased his sleep and rest, overcome constipation, increased his liquid intake, or in other ways improved his habits with a resultant improvement in color, weight, alertness and cheerfulness. For such children there are growth charts of the type commonly used by nutrition classes showing the child emerging from the underweight group, and there is the testimony of the teacher and the parent for the improvement in the general health and school work of these children. Space does not permit here the discussion of individual cases.

HABITS REPORTED IMPROVED IN LAST THREE YEARS

	Experimental	Control
Play more outdoors.....	35%	22%
No candy between meals.	12%	4%
More fruit	9%	4%
More vegetables	24%	11%
Better breakfast	12%	3%
Bathe more regularly....	5%	3%
Posture	10%	0%
Brushed teeth more.....	28%	35%
Better appetite	7%	2%
Gave up tea.....	21%	7%
Gave up coffee.....	20%	7%
Bed earlier	31%	22%
Open windows	18%	4%
More milk	27%	10%
More water	16%	8%
Stopped nail-biting	17%	2%

The tuberculosis preventorium, the college training squad, the military training camp, the nutrition class have all improved the health of individuals by improving their mode of living. There is no reason why the improvement of health habits among children should not prevent the loss of health on the part of those who are well and assist in regaining health on the part of those who are not so well as they should be. But we do not wish to imply that health education promptly brings all children up to average weight.

We can find children who have interesting growth curves outside of health education and nutrition classes, and we can find children who have been exposed to health education whose growth record is not encouraging. We are especially studying those children who failed to show improvement. There is work still before us in evaluating the benefits and limitations of such a program but there is evidence at hand that it is of value.

WEIGHT

Of the various measurements which may be applied, weight is the most exactly determined, the most variable and the most subject to change because of change in the regimen. Data concerning the nature of these groups is given in the accompanying table, and the growth in pounds for boys and girls during the twenty-months period is shown in the accompanying graphs.

TABLE I

ORIGINAL MEASUREMENTS AND GROWTH IN WEIGHT FOR EXPERIMENTAL AND CONTROL GROUPS

	Boys		Girls	
	Experimental	Control	Experimental	Control
No. children	132	107	141	95
	Characteristics October, 1921			
Average height	55.2 in.	55.3 in.	55.2 in.	55.8 in.
Below average weight	76%	76%	72%	75%
10% below average weight	25%	23%	31%	27%
Average relation to Wood Wt. Norm	95.8%	96.0%	96.6%	97.1%
Average weight in pounds	73.5(±0.7)	74.0(±1.1)	73.8(±0.8)	76.3(±1.3)
	Growth Data			
Average age	11.1 yr.	10.8 yr.	11.0 yr.	10.8 yr.
*Expected gain for 20 months on basis of age alone.	12.7 lb.	12.4 lb.	16.3 lb.	16.1 lb.
Actual gain for 20 months	13.5 lb.	11.1 lb.	15.3 lb.	15.3 lb.
Actual gain for 20 months in terms of original weight	18.5%	15.0%	20.7%	20.0%
	Underweight Children Only			
No. children	100	81	102	72
*Expected gain for 20 months on basis of age alone.	12.9 lb.	12.3 lb.	16.6 lb.	16.0 lb.
Actual gain	13.2 lb.	11.1 lb.	14.9 lb.	14.2 lb.
Actual gain in terms of original weight	18.6%	15.7%	21.2%	19.9%

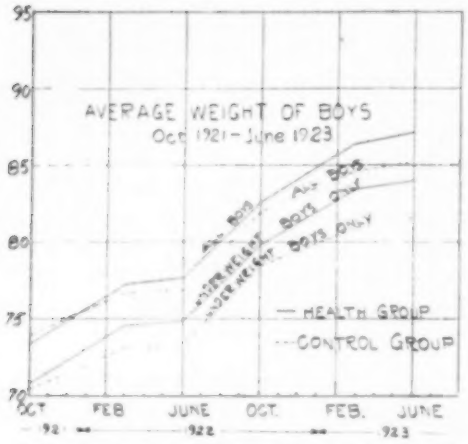
* Based upon Baldwin Averages.

GROWTH RECORDS

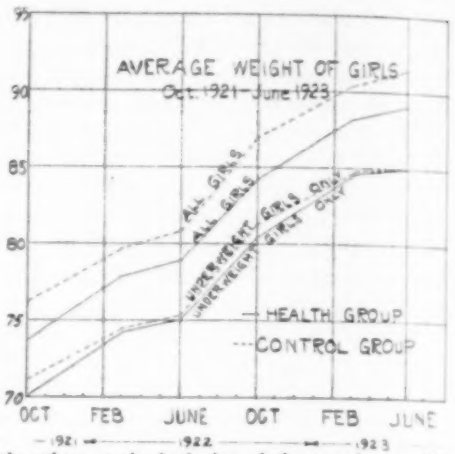
As indicated above physical measurements have been taken for the purposes of studying growth. These studies confirm the earlier investigations upon the seasonable variations in growth.[10] Studies upon the intermittency of growth and its significance are being made but cannot be reported here.

Of the 273 children in our experimental health classes approximately 48 per cent were of native stock, 13 per cent of Italian parentage and 39 per cent of Jewish parentage. There was no appreciable difference in the national groups as between boys and girls. Approximately 81 per cent of the control children were native stock, 9 per cent Italian and 10 per cent Jewish. These children are practically all native born. Some of the Jewish and Italian parents are native born, but the majority of them are not.

The average age of the experimental group seems to be slightly greater than that of the control group. The average is not a very satisfactory figure, however, with which to work. A more exact and understandable figure is that obtained from studying the expected gain on the basis of age. By multiplying the number of boys or girls of each age year by the expected gain in ounces per month the average or expected gain on the basis of age for any particular group of children may be secured. This figure interprets the difference in age between two groups in terms of expected gain. Such computations were made for both the boys and girls in the experimental and the control groups. For the second year the ages of each group were set ahead one year and a similar computation made. The expected gain for each group for the twenty-month period was determined.



NOTE: As shown by Table I the two groups of girls do not offer as fair a comparison as the two groups of boys. The girls in the control group were larger than the others at the beginning of the experiment. They were taller, heavier and had fewer 10% underweight individuals.



The difference in growth rates of boys as contrasted with girls tends to obscure the significance of figures when these groups are treated together. Upon this basis the results of the health education program would appear more favorable than they really are. Boys and girls are therefore treated separately in the figures here presented.

The two groups of boys studied, one with health education and one without, are remarkably comparable. If there is any difference in home conditions it is in favor of the control group. The mean weight for the experimental group is 73.5 lbs. ± 0.7, for the control group 74.0 lbs. ± 1.1.

Using these averages as describing a composite boy we may consider that we were studying the growth of two boys. In October, 1921, boy *A* undertakes a program of health training. Boy *B* does not. Both children are below average weight for their height and age according to the Wood standard (96 per cent normal). Although *A* is a little older *B* is a trifle taller and a half pound heavier. *A's* expected gain for a twenty-months period on the basis of his age alone is 12.7 pounds and *B's* expected gain is 12.4 pounds. *A* increases his amount of sleep and occasionally takes a rest period during the day. He has more milk, more fruit and vegetables, is more careful to eat a good breakfast; he spends more time out of doors, eats less candy between meals, drinks less tea and coffee and takes more pride in his personal appearance. He has nearly given up the habit of nail-biting, and has made a conscious effort to maintain greater cheerfulness. His school room is kept somewhat cooler. Between October and a year from the next June, *A* gained 13.5 pounds and *B* gained 11.1 pounds.

The statistical error involved because of the limited size of the two populations is indicated by the probable error of the mean which is 0.7 pounds for *A* and 1.1 pounds for *B*. The slight differences in size and ancestry seem to favor *B* as indicating that he is, if anything, of a larger rather than a smaller stock than *A*.

In the case of the girls the comparison is not so accurate since the girls in the control group were appreciably taller and heavier than the girls who undertook health training. It will be seen from the tables, however, that although the *A* girls were smaller, their gain was equal to that of the *B* girls. The gain of the *A* girls in terms of percentage of their original weight was greater than that of the *B* girls and, when the underweight girls are considered separately, the *A* record is distinctly better. Comparison of the two

groups of girls does not yield such significant contrasts, however, as is found between the boys. It will be noticed that the girls do not approach their expected gain as computed by Baldwin as nearly as the boys do.

No explanation for this difference between the sexes is suggested by our studies. However, the following quotation from Donaldson[11] is of interest in describing experiments with albino rats.

"Using a group of 148 males and 158 females, composed of animals which were specially well selected, which were carefully cared for and fed, Greenman and Duhring (1923, page 4, chart No. 1) recorded a growth curve for the male which after a hundred days shows higher values than those just given. At 350 days this special group surpasses our male values by 65 grams and the curve is still rising.

In the case of the females the superior treatment and food produced animals which are about 15 grams heavier at 100 days and about 18 grams heavier at 350 days. As so often happens the greater response is given by the males."

One is reminded also of the difference in metabolism as indicated by the higher food intake of boys as worked out by Benedict and others. No conclusion is drawn but further study is suggested.

HEIGHT

Our records suggest that group *A* gained slightly more in height than group *B* and that over the two-year period there may have been some acceleration of growth in height. The precision of our measurements was not so great, however, as to allow any conclusion. Further study is suggested wherever there is opportunity to observe an acceleration in growth due to improved nutrition or environment to see whether growth in height as well as growth in weight is accelerated. Often in the past children have not been remeasured for height at the end of a period of rapid growth in weight. Dr. Collis[12] in discussing cotton mill operatives who begin work on part time at twelve years of age points out that

"School records show that Lancashire juveniles at twelve years of age do not differ much in physique from juveniles in other parts of the country; yet by the time they are eighteen years of age they have failed to attain the average height of the artisan class by some inch and a half or more."

Dr. Holt[13] says that the children of successful and prosperous Russian Jews who have become considerably Americanized are almost as tall as those of our native born population, the children being frequently four or five inches taller than their parents. It seems likely that while nature determines the *possibilities* of an individual through heredity, nurture determines whether he reaches his possibility.

RELATION TO NORMAL

Studies of the relationship to normal weight (Wood Tables) show that 77 of the 273 children whose growth record we are able to carry over a two-year period were more than 10 per cent underweight at the beginning of the experiment in October, 1921. At the end of one year 18 of these children or one in four had come out of the underweight group. Meanwhile four other children slipped back into it. Data for all children were not available the next year, and many children left our classes; but there are records for those members of the underweight group who remained in our schools. In September, 1924, 45 of these children remained, 14 of whom were no longer 10 per cent underweight. At the present time (February, 1925) there are 23 of these children in our classes of whom 10 (9 girls and 1 boy) are still underweight, while 13 have come out of the 10 per cent underweight group. Nutrition surveys in other cities show that there is not a natural tendency for the number of underweight children to decrease through these later grades of the elementary school.

Averages show that all groups of children were from 1 to 2 per cent lower in their percentage of normal weight in June

than in October. The data show that the underweight children in the experimental group are consistently nearer normal during the second year, showing an improvement from 0.2 to 1.1 per cent.

According to the Wood standard the children in the experimental group average 96.3 per cent of normal weight and the children in the control group 96.5 per cent. Sample weighings and measurings of 100 children with and without shoes suggest that if the weighings had been made without shoes the relationship to normal would have been raised by something over 1 per cent.

A child's percentage of normal, however, is an inexact figure because age is reckoned in years without interpolation. Here it was rendered more inexact because we were measuring children with shoes on. The "percentage of normal" figure is inexact even when used upon the same group of children for corresponding dates in succeeding years and its fluctuation is not a good measure when used to compare the growth progress of *different groups* of underweight children at *different seasons*. The standing of a school population differs in different seasons and there is need for the development of a standard practice for computing the number of underweight children at a definite time of year (perhaps April 1–15) if it is desired to compare one city with another.

SUMMARY

Health education, though not the only essential in child health, does appear to be a practicable procedure which should be a part of every school health program. The adoption of health education by the entire school system in Malden beginning with the fall term offers an opportunity for further study which should be of great value if sufficient funds can be found for measuring accomplishments. To date it may be said that our studies have yielded the following results:

1. Given a fair but experimental and critical trial without any initial investment of funds from outside sources, health education has commended itself to the school authorities, teachers and parents as a sound procedure, and is being adopted as a part of general school procedure.

2. Malden has served as a laboratory in which health education methods might be tested and taught and from which useful methods have been adopted in other communities. In this laboratory enough people have already been trained as specialists in health education so that 100,000 children are now receiving health training under their leadership.

3. In the judgment of physicians and nurses, health education is a benefit to the medical and nursing work.

4. The program has resulted in an improvement of habits.

5. Health and growth records of individual children give strong evidence of health improvement through habit improvement.

6. Growth studies indicate that health education will assist in reducing the number of underweight children and in stimulating or accelerating the growth rate of children whose habits of living are poorer than nature intended them to be.

7. The desirability of further study is clearly demonstrated.

REFERENCES

1. Turner, C. E., Health Teaching and the School Health Program. *A. J. P. H.*, Vol. 11, No. 8, pp. 717–20.
2. Turner and Collins. Health. D. C. Heath & Company, 1924.
3. Training Teachers for Health Education. Proceedings of the Thirteenth Congress American School Hygiene Association, New York City, November, 1921.
4. Training of Specialists in Health Education. Report of the Lake Mohonk Conference. *A. C. H. A.*, 370 Seventh Avenue, New York City.
5. Health Education. A Report of the Joint Committee, National Education Association, Washington, D. C., 1924.
6. Report of the Health Education Conference at the Massachusetts Institute of Technology, June, 1924. *A. C. H. A.*, New York, 1925.
7. Baldwin, Bird T. Physical Growth of Children. University of Iowa, 1921.
8. The School Health Program. *A. J. P. H.*, March, 1922, pp. 207–11.
9. The Importance of Health Education in a Public Health Program. Report of the International Health Education Conference at San Francisco. *A. C. H. A.*, 1923.
10. Porter, W. T. *Am. J. Physiol.*, 1920.
11. Donaldson, Henry H. The Rat. Memoirs of the Wistar Institute of Anatomy and Biology No. 6.
12. Collis & Greenwood. The Health of the Industrial Worker. Page 291. J. J. Churchill, London, 1921.
13. Holt, L. Emmet. Food, Health & Growth. Macmillan Co., 1922, page 20.

THE ADMINISTRATIVE CONTROL OF CONTAGIOUS DISEASES*

C. V. CRASTER, M.D., Fellow, A.P.H.A.
Health Officer, Newark, N. J.

THE ONSET of the industrial era in Europe, and in America too, changed to an immense degree the general living conditions of the populations. As a result of economic demands for factory labor and also the lure of better wages, a continuous drift of population took place from the rural districts to the towns.

This would not have been important as a national change had the cities been able to absorb and accommodate the vast army of employed. As it was, the cities were without sufficient dwellings and such as they had were without a water supply, without sewerage, without even an available or clean food supply to provide for the new citizens. These conditions brought about in the vast majority of city dwellings in America and abroad during the middle of the nineteenth century overcrowding, indescribable filth and generally a miserable living standard among the families of the poor. Disease and every kind of infection ran riot, finding ideal conditions in the foul homes and in the emaciated and undernourished bodies of unfortunate victims.

Speaking of the living conditions in the tenement buildings of the City of London in the 19th century Simon said: "There are some places where the mortality is yet high, where in fact the cloud of death is always hanging, where the vitality of the people is seriously sapped and where disease makes an easy conquest. It is not enough that these places are the continuous haunts of such endemic maladies as phthisis, fever, and other putrid classes, but often they become seats of stronger pestilences."

A parallel to this situation existed at the same time in the City of New York, where in 1864, according to the City Inspector, 6,000 families comprising 18,000 individuals were living in underground cellars. "These dark, damp and dreary abodes," said Stephen Smith,* "are seldom penetrated by a ray of sunshine or enlivened by a breath of fresh air. At high tide the water often wells up through the floors submerging them to a considerable depth. In very many cases the vaults of privies are situated on the same or higher level and their contents frequently ooze through the walls into the occupied apartments beside them." It was in such conditions as these that within two weeks the medical inspectors of the Committee on Public Health found 1,200 cases of unreported smallpox and 2,000 cases of typhus fever. The average death rate for the City of New York at that period was 28 per 1,000 of the population.

The modern requirement of the reporting of contagious disease was not only a means of knowing where the infection existed but brought to light the conditions of starvation, destitution and improper housing existing among a great proportion of the working population.

It was evident that although routine enforcement of such old established meth-

* Read at the Joint Session of the Public Health Administration and Public Health Nursing Sections of the American Public Health Association at the Fifty-third Annual Meeting at Detroit, Michigan, October 22, 1924.

* "The City That Was," American Public Health Association.

ods as isolation and quarantine were administration methods of some value in the control of epidemics, they would in the end be useless as mere gestures unless there was possible an improvement in the actual living conditions of the people. The demand for reform brought about the great national efforts to insure a good water supply for cities and the provision of adequate sewerage and refuse collection systems, as well as a general improvement in the type of city dwelling used by the worker.

The greater number of epidemic diseases which swept over enormous continental areas were strictly diseases where possibilities of spread were directly questions of environment. This class would include smallpox, yellow fever, dysentery, typhoid fever, bubonic plague, cholera, malaria, typhus fever, meningitis and tuberculosis. All of these with the exception of tuberculosis have ceased to be widely prevalent except in countries where famine, destitution and filth exist as a result of war or economic revolution. As we view the conditions surrounding the existence of these diseases how obviously weak are any claims that notification, isolation and quarantine have materially influenced their progress or limited their spread.

The great plagues have not been controlled to any visible degree by such methods, although many claims of this kind are being continually made. We know for instance that the virus of typhus fever formerly so mysterious in its spread is now shown to be carried by the body louse and in no other way. It cannot exist among a louse-free population so that statements as that " the main factors in the reduction of typhus fever have been the immobilization of infected cases in fever hospitals, the rigid cleansing and disinfection of invaded households and the superveillance of persons who have been exposed to infection " cannot but be misleading as magnifying the small part played by isolation and quarantine at the expense of the real reason, the improved cleanly and economic standard of the homes and the habits of the greater part of the population.

Relapsing and remittent fevers are similarly diseases propagated by the same methods and exist by the same undesirable uncleanliness as with the case of typhus fever. Their control is obviously one of improvement of personal hygiene, in dwellings, and in the doing away of areas of congested population. Hospitalization, isolation, quarantine and disinfection although desirable are themselves of little account in the control of such epidemics as these if there is not a simultaneous and general delousing and cleaning of the entire susceptible community. In a similar manner the presence of bubonic plague is contingent upon a heavily infected rat population without which plague cannot exist.

Likewise the control of typhoid is only possible by a general and complete adoption of anti-typhoid vaccination. That such methods are successful is clearly shown in the records of warfare. In the American Civil War 36,000 soldiers died from typhoid fever in the Army of the North alone. In the Boer War in South Africa 8,000 deaths occurred from this cause. In the World War in the efficiently inoculated American Army of 1,381,429 men there were in 1918 only 240 cases of typhoid fever reported. In the large cities of our country the disease is establishing lowest levels of prevalence. The occasional local outbreak is nearly always traced to a carrier infecting a household or business food supply. In countries where massive pollution of the natural water supplies occurs as in India with its religious ablutions in rivers and lakes from which domestic water supplies are drawn, cholera and dysentery are naturally uncontrollable.

THE PRESENT ENDEMIC INFECTIONS

With few exceptions there has been a remarkably lessened mortality of every

type of contagious epidemic disease witnessed in the 19th and 20th centuries. In Europe and in America, the medieval plagues have ceased to exist or have receded to endemic areas in Asia, particularly India. The same phenomenon has since been observed in those minor and fatal infections which are prevalent in all large cities in the temperate and subtropical zones.

success of modern life saving by the development of the antitoxin serum, the reduction in mortality from this cause in the cities amounting to 28 per cent in the ten years. As compared with only 5 per cent from the rural districts, we have here apparently a proof of the value of this remedy. The availability of the antitoxin in the city, and its almost universal free distribution to the physicians has

TABLE I

MORTALITY FROM CONTAGIOUS DISEASES PER 100,000 FOR REGISTRATION CITIES AND RURAL DISTRICTS 1913 AND 1922

	Cities in Registration States			Registration Rural Districts		
Diseases	1913	1922	Percentage Decrease	1913	1922	Percentage Decrease
Diphtheria	21.6	15.6	28	14.7	14.0	5
Scarlet Fever	9.7	3.6	62	5.7	3.4	40
Typhoid Fever	16.1	4.8	70	19.6	10.0	49
Pulmonary Tuberculosis	139.1	83.0	40	110.4	84.9	23
Pneumonia	156.2	120.3	29	101.6	85.3	16
Meningitis	10.9	1.2	89	9.4	0.7	93
Whooping Cough	9.3	5.5	41	11.3	5.6	50
Measles	13.5	7.2	47	12.4	1.8	85
Erysipelas	4.8	2.7	44	3.2	2.3	28
Malaria	1.0	0.9	10	3.2	6.0	87*
Puerperal Diseases	17.2	16.9	2	13.8	14.5	5*
Smallpox	0.1	1.0	900*	0.3	0.4	33*
Influenza	8.5	23.6	177*	16.3	38.3	135*

* Increase.

Within a space of ten years the reduction in mortality from these infections is clear-cut (Table 1). In the cities of the United States Registration Area there was a decrease in meningitis mortality of 89 per cent between 1913 and 1922. Typhoid fever deaths were cut 70 per cent, scarlet fever 62 per cent and measles 47 per cent. It was notable also that in the registration rural districts where administration control is least enforced the mortality from meningitis was reduced 93 per cent in the same period and measles mortality was reduced 85 per cent.

The typhoid fever mortality in the registration rural districts was not reduced in this period to the same extent as the cities (49 per cent), the reason for this being apparently the more localized water supplies and the lack of modern plumbing and sewerage systems. There was, however, a comparatively similar fall in the mortality in rural districts from scarlet fever (40 per cent) as compared with the cities.

Diphtheria is a striking instance of the encouraged its use in doubtful and early cases of the disease. In the rural districts laboratory facilities are poor or slow in diagnosis of swabs, moreover antitoxin is not stocked by the small druggist, with a consequent delay in administration to the positive cases and none at all to the suspicious or early cases of infection.

In the mortality from malaria the cities show a decreased mortality of 10 per cent in the ten years, whereas the rural districts show an increase in mortality from this cause of 87 per cent. With the drainage of swamps, the efforts of mosquito extermination bodies and the filling in and drainage of low lying swamps around cities, there has been a steadily decreasing prevalence of malaria in large urban districts.

The most significant increase in the mortality for both the cities and registration districts is that from smallpox, 900 per cent increase for the cities in ten years, and 33 per cent for the rural districts. We have here an indication of the recurring virulence of an old plague.

There is virtually no immunity to the infection among men, all being susceptible. It is true, however, that recent experience shows the disease to be mild in nature so that the mortality recorded by no means represents the excessive prevalence of the epidemic infection. The extreme virulence of any infection is intensified by conditions of famine and destitution in which situation the case mortality is high. The increased mortality in the cities and rural districts, for the ten years 1913 to 1922, would appear to be not only a result of late or incorrect diagnosis but also of the failure to adopt vaccination as a requisite for school attendance. Where this is a routine measure sporadic smallpox outbreaks quickly burn themselves out.

INFLUENZA AND PNEUMONIA

The great problem of modern disease control is the respiratory disease. Is administrative control possible? In most infections there is considerable reason to suppose that nature herself has taken a hand in reducing the toll of sickness and death, and indeed this theory has been continually expounded, especially by those early observers who saw so little done by the people to control infection and yet recorded the slowly decreasing mortality from many epidemic infections. Cyrus Ramsay, Registrar of Statistics of New York City in 1864, stated that "doubtless nature had done most to banish this fearful malady for after a lapse of time the plague assumed a milder form as is the case with all or nearly all epidemics." "We are inclined to boast," says Victor C. Vaughan, "that the age of pestilence has passed, but with a fair acquaintance with the history of epidemics, I dare say that the world has never before known a pestilence more widespread, more intensive and appalling in its progress or more destructive of life than the epidemic of influenza which apparently came into being and grew in violence as the World War passed through its final stages."

Although there is reason to believe that mankind acquires immunity to epidemic attack after a longer or shorter period of time, it is logical to suppose that more recent infections are those against which there is little or no immunity as yet developed. This may well be the case with pneumonia and measles, respiratory diseases of such high infective power that even a high degree of personal hygiene and the intelligent application of all known safeguards by individuals fail to prevent contact infection between individuals. Although in the case of pneumonia a decreasing mortality is observable both in the cities (29 per cent decrease) and rural districts (16 per cent decrease) within ten years, there is an increasing mortality from influenza during the same period, cities 177 per cent increase, rural districts 135 per cent increase. The two years quoted were by no means epidemic years or years noted as free from the disease. During the great pandemic visitation of influenza of 1918 every modern administrative method of control was tried in vain by health authorities with no tangible results in controlling infection or limiting the spread of the disease.

In the acute respiratory diseases it is questionable whether isolation and quarantine, as enforced today, is of any avail in circumscribing the spread of infection. Hospitalization, of course, in the case of widespread respiratory epidemics is impossible, and its value except as treatment doubtful.

In a careful observation of the prevalence of epidemic diseases in the City of London, England, since 1911, Brend[1] states that "there has been an increasing prevalence of scarlet fever and diphtheria and the high figures for 1914 show how far we are from "stamping out" these diseases, irrespective of the fact that 90 per cent of the cases notified are now received into the hospitals. We must almost certainly abandon the hope of stamping out disease through their agency."

"In respect to most diseases due to respiratory infection," says Newsholme,[2] "we are groping in darkness as dense as that which beset Chadwick, Farr and Simon in their earlier work and with little hope of any campaign comparable with that against dirt *en masse*, which was largely effective in reducing the specific infections of cholera, dysentery and typhus fever, and even of tuberculosis."

Epidemic meningitis, poliomyelitis and encephalitis although usually classed as communicable diseases are only slightly so, inasmuch as secondary cases in families are unusual and few infections among attendants upon the sick have been reported. These are diseases in which apparently the susceptible individual is selected as a result of a widespread infection of the throats of normal, healthy individuals with the virus of the disease. The isolation and quarantine of infected individuals by itself will do little to control widespread infection in meningitis and encephalitis. The helpless position of health departments in the control of such infections as these was never more emphasized than in the epidemic of poliomyelitis in 1916. Every kind and type of restrictive measure was adopted and ruthlessly pursued by puzzled and impotent administrations with absolutely no results in circumscribing or retarding the march of this disease over the civilized world.

The reporting of tuberculosis to health departments was a procedure of entirely different intent to that of contagious diseases, for no isolation or quarantine was attempted except when the patient was knowingly endangering the public health. The information obtained as a result of reporting tuberculosis has mainly been of use in tabulation of mortality and for directing efforts at improvement of living quarters either in isolated instances or as mass attacks upon the insanitary living quarters. On the other hand, reporting has brought to the attention of authorities advanced and hopeless cases but has signally failed in the main object of bringing incipient cases to the attention of physicians and health clinics.

It is a common attitude to attribute the greatly reduced mortality from tuberculosis in recent years to whatever pet health or social agency the speaker happens to represent. We can be virtually certain that the preventive methods so far adopted in the fight against tuberculosis, such as reporting, hospitalization and medical treatment and advice, have had but a small share in the responsibility for the reduction of mortality from this disease all over the world. Tuberculosis is preëminently a disease of low infective powers and has decreased in prevalence whenever living and working conditions have been bettered and the standard of living raised, appearing from time to time and becoming apparently epidemic after wars, famine and national catastrophes, in spite of the more expert and efficient steps taken to control it from the standpoint of a communicable disease.

NON-FATAL EPIDEMICS

As virulent and highly fatal epidemic diseases have receded, a whole regiment of non-fatal maladies, more or less always prevalent in city areas, has been shown to have important effects upon economic and social life. If it is accepted that contagious disease may be preventable and efforts at control desirable, then we must measure very carefully the value of whatever administrative weapons are available. The principal non-fatal infections, German measles, chickenpox and mumps, are usually widespread in cities during winter and spring in our climate. The three diseases are never attended by mortality but their infective nature would indicate the presence of many susceptible individuals.

It is, of course, undesirable to rate the importance of any epidemic by reason of its high mortality, for widespread non-fatal disease may cause great economic

loss, not only in the amount of sickness engendered but also as an economic interference with school attendance. If the average annual absence from school for quarantinable disease is taken as ten days, then every 1,000 such children infected represents a loss of 10,000 school days, which in the aggregate during one winter must represent a huge loss in school attendance. How far then are such diseases controllable? It is the experience of most health departments that in spite of all the usually accepted methods for supervision, these diseases will riot unrestrained among us. As in the case of measles and whooping cough, it is safe to assume that the infecting organism is present in the nose and throat in the early stages of the disease and before any characteristic symptoms are evident. Seldom is the patient incommoded by anything more than a transient fever or headache, so that when the character of the ailment is pronounced, many, if not all, susceptible playmates and relatives have been exposed to infection.

CONFUSION IN ADMINISTRATIVE CONTROL

Meanwhile we are without any means of determining the value of control measures for the endemic diseases of our northern climates. Few authorities would agree that no effort should be made along accepted lines to control many of our common infections, and yet no standards are available for our guidance. In the larger cities of the country a great variety of methods are in force for the supervision of disease, and confusion of methods could go no further.

In reply to a questionnaire sent out to 54 large cities of over 100,000 population, in twenty-three diseases upon which information was asked few were apparently alike in their methods of control. Although in the case of diphtheria, placarding, isolation and quarantine were universally enforced, the period of quarantine had wide variations. Over 40 per cent of the cities required two negative cultures; 11 per cent required a minimum quarantine of one negative culture and a minimum quarantine period of from 10 to 14 days. The longest quarantine for the disease was 21 days, required by 11 per cent of the cities.

The administrative measures in force for scarlet fever were similarly marked with a variety of home opinions. The disease was reportable and placed under supervision in all, but quarantine periods ran the whole length of the calendar. The 30-day quarantine was apparently the most popular with 39 per cent of the cities, whereas 32 per cent were satisfied with 28 days, and 17 per cent with 21 days. Quite a few, 7.4 per cent, enforced 48-day quarantine, while some went so far as 6 weeks.

In typhoid fever and paratyphoid, the measures for routine control were apparently very nebulous in the cities. Although all the cities required their reporting, and 74 per cent supervised the cases, in more than half the cities, 53.7, no quarantine period was enforced, whereas in the cities that did enforce quarantine, this period varied from 5 days with 2 negative stool and urine cultures, to 6 weeks with negative laboratory findings.

In the case of tuberculosis, all the cities required the reporting of cases, although 41 per cent reported no supervision over the cases by the health department, this probably being carried out by other agencies equipped for this purpose.

In respiratory diseases, such as pneumonia, whooping cough, measles and influenza, the cities required official reporting in nearly all; although isolation and quarantine were apparently regarded as ineffective, as only 15 per cent of them require a quarantine for pneumonia, and 25 per cent for influenza. The effort at controlling measles by quarantine was limited to 31 per cent of the cities requiring two weeks and other periods varying from 5 to 16 days. No quarantine was called for in 24 per cent. Whooping cough control by quarantine

was extremely varied; 22 per cent had none; 6 weeks seemed to be a popular period among 18 per cent, and 21 days in 13 per cent of the communities. The time of isolation was extremely varied, from 2 to 8 weeks being a frequent disparity between health procedures.

TABLE II

ADMINISTRATIVE MEASURES IN CONTAGIOUS DISEASES
RESULTS FROM 54 CITIES OVER 100,000 POPULATION
(Figures give percentage replying "Yes")

	Reportable	Quarantine Notices Served	Isolation Required	Placarded	Type of Supervision: Supervised	Supervised: By Insps.	Supervised: Nurses	Terminal Disinfection	Terminal Fumigation	Any Disease Circulars Distributed	Free Serums and Vaccines
Diphtheria	100	72	100	100	100	63	54	61	54	67	94
Scarlet Fever	100	72	100	100	100	67	54	61	54	63	13
Typhoid Fever	100	56	85	44	74	56	52	56	7	63	67
Para-Typhoid	85	43	70	37	63	43	52	52	6	37	52
Tuberculosis	100	22	24	0	59	11	74	46	22	61	17
Lobar Pneumonia, all forms	100	..	...	...	...	..	..	..	..	..	..
Pneumonia	87	9	22	6	19	9	22	20	4	20	19
Epidemic Meningitis	100	65	93	83	94	59	50	59	28	33	41
Poliomyelitis	100	69	91	87	93	57	48	56	24	39	9
Whooping Cough	100	46	69	54	72	39	44	28	4	41	26
Measles	100	50	78	57	76	43	44	28	2	41	7
German Measles	94	39	63	37	59	37	41	26	..	28	6
Chickenpox	100	39	91	43	69	37	39	24	2	26	7
Mumps	94	24	59	24	54	24	35	19	2	20	7
Ophthalmia Neonatorum	93	13	28	...	43	11	44	15	..	15	30
Erysipelas	67	7	30	...	17	9	15	15	2	6	9
Malaria	76	..	11	...	11	9	15	6	..	9	7
Puerperal Fever	33	..	4	...	7	2	6	6	..	2	6
Puerperal Septicaemia	35	..	7	...	7	2	7	6	..	2	6
Smallpox	100	70	100	100	100	65	37	67	52	39	69
Tetanus	80	4	7	...	9	4	11	4	4	6	44
Anthrax	93	13	33	9	28	24	17	11	4	4	17
Influenza	94	7	41	11	35	20	24	11	4	20	9
Encephalitis Lethargica	87	13	35	7	24	19	20	13	..	6	6

The shotgun measures adopted by many municipalities in 1916 for the control of poliomyelitis is reflected in the various procedures adopted. All the cities required its reporting, and 93 per cent supervised the cases; but the quarantine periods showed no common ground for attack, varying from one week after normal temperature, to 6 weeks after onset. Forty-two per cent of the cities require 3 weeks; 14 per cent had no quarantine, and 11 per cent had an indefinite time until recovery.

With German measles, chickenpox and mumps, the various cities were apparently satisfied with the reporting of the infections, as only about half attempted any supervision and quarantine of cases. Ophthalmia neonatorum cases were reported in nearly all the cities, although only half carried out actual supervision, and only 25 per cent of the cities required quarantine. In erysipelas, puerperal fever and puerperal septicaemia, little is apparently carried out as control measures in more than a third of the municipalities. Only 7 per cent of the cities supervised the puerperal infections and 17 per cent erysipelas. In very few was there any stated quarantine period.

In the acute respiratory infections there seems to be an indecision as to what procedures are applicable, and although supervision, isolation and quarantine are not generally adopted by the cities, there is apparently little done in the way of publicity by department effort, as compared with tuberculosis, diphtheria, and scarlet fever, in which diseases nearly 70 per cent issue and distribute circulars of information. In pneumonia and influenza less than a quarter carry on this necessary function. In the other more generally endemic infections, such as German measles, chickenpox and mumps, infec-

tions admittedly impossible to control by ordinary methods, the publicity and education efforts are seemingly only infrequent among the large cities, only 25 per cent reporting such activities.

CONCLUSIONS

In few diseases can it be absolutely certain that present measures of control are other than gropings in the dark. It is impossible by ordinary means at our disposal to determine the true value, if any, of quarantine and isolation in the common respiratory infections, such as pneumonia, influenza, whooping cough and measles. Late experience with influenza is not an encouraging guide for this enforcement. A similar situation exists with regard to scarlet fever and diphtheria which will spread widely in spite of the most drastic efforts at isolating the infected individual in home or hospital.

It might be desirable to adopt a definite municipal procedure against such diseases after a careful investigation by competent authorities. The methods by which each procedure should be tested would require observation and deduction among large masses of population and for long periods of time. If we class epidemic disease prevalence similar to those visitations of blight and moth plagues which come from no one knows where, and depart after a due season of sickness and death, then mass infection will be contingent upon susceptibility.

Disease is not, however, inevitable, for all the signs point to increasing aid from natural and acquired immunity in human beings to all known infections. As it is an accepted fact in military tactics that victory is not complete without an effective pursuit, so must we sift out and adopt all effective means to rout the retreating foe. The most encouraging steps toward this end lie in preventive medicine and the various methods of picking out the susceptible individual and raising the natural immunity by vaccines and toxins. If we can eliminate the incidence of endemic diseases by prophylactic inoculations, we may awake some morning and find them gone from among us like lepers of old.

Finally, the prevention of disease is inherently an economic and social problem. Given a well-fed, well-housed and healthy community, there will be found fewer opportunities for infection. In the words of Greenwood,[3] "The task of preventive medical science is not to discover new rules but to devise methods of measuring how far the rules we know are, or can be, obeyed. The art of preventive medicine does not consist in a multiplication of specifics but in securing a high average standard of healthy living."

REFERENCES

1 Brend, Health and the State, 1918.

2 Newsholme, Public Health and Insurance, 1920.

3. Greenwood. The Relationship of Health to Atmospheric Environment. *Internat. J. Pub. Health*, May and June, 1921.

INDUSTRIAL HYGIENE BY EMPLOYERS' ORGANIZATIONS*

FRANK LESLIE RECTOR, M.D., Fellow, A.P.H.A.
Secretary, Conference Board of Physicians in Industry, New York, N. Y.

FEW ORGANIZATIONS of employers have taken up the question of industrial medicine and hygiene to any extent. That they are interested, however, is evidenced by the fact that at annual conventions and similar meetings papers appear on their programs dealing with some phase of medicine in industry. Usually these discussions center around the influence of medical work on the labor policies of the firm, the value of physical examinations, the cost of medical service and related problems.

Because of its long schooling in matters of finance and cost considerations, industry naturally looks first to the financial return on its investment in medical work. It would like to be able to show a return measured in dollars and cents from the activities of its medical departments. Because this is frequently impossible many industrial organizations have been slow to extend their medical and health activities beyond that necessary to provide the care demanded by the compensation laws.

The organized industrial body which is probably doing as much or more work than any other along medical lines is the National Industrial Conference Board, an organization of some 32 national and state manufacturers' associations. A physician has been attached to its research staff for the past five years for the purpose of studying various problems, both clinical and administrative, that arise in the conduct of medical departments in industry. The most tangible results of the board's activities along medical lines have been the publication of reports of certain investigations that have been conducted by it.[1]

In addition to these reports the results of several short investigations have been published in the medical and technical press and much time has been given over to consultations on subjects of general and special interest to industrial managers and others interested in social welfare and health matters. In connection with the Conference Board of Physicians in Industry, this board attempts to be a clearing house for information bearing on all general industrial medical subjects.

The Conference Board of Physicians in Industry is the oldest organization of its kind dealing with problems of industrial health. This board was organized more than ten years ago and is composed of the medical directors of 30 large industrial corporations located in the principal industrial states. While it is an independent body, its budget is supplied by the companies represented in its membership. It maintains an affiliation with the National Industrial Conference Board in that it has by formal resolution been made the advisor on medical problems in industry to the National Industrial Conference Board the medical investigator of which is also the part-time secretary of this board.

The purpose back of the organization of the Conference Board of Physicians was " for coöperative effort in introducing into industrial establishments the most

* Read before the Industrial Hygiene Section of the American Public Health Association at the Fifty-third Annual Meeting at Detroit, Michigan, October 21, 1924. [Editor's Note.—This is the third paper to be published from the Symposium on the Extension of Industrial Hygiene. *A. J. P. H.*, March and April, 1925.]

effective measures for the treatment of injuries or ailments of employes; for promoting sanitary conditions in workshops; and for prevention of industrial diseases."

This physicians' organization has made noteworthy contributions to the progress of medical work in industry. It has standardized methods of making physical examinations of workers and of recording such findings; it has developed a classification of physical defects which makes possible the comparison of the results obtained in different industries; it has standardized the minimum size and equipment of first aid rooms or plant dispensaries and the contents of first aid kits; has formulated instructions for the guidance of laymen who administer first aid to injured persons; promulgated a definition of the physician in industry and contributed in other ways to the prestige of medical service in industry. By its advice and counsel it has been of material assistance to the National Industrial Conference Board in compiling the reports referred to earlier in this paper. The board recently completed the formulation of a group of medical provisions for workmen's compensation laws[2] which it is believed will, if adopted, go far toward clearing up many disputed points in the administration of these laws.

The New England Conference of Industrial Physicians was organized several years after the Conference Board of Physicians was formed. Both bodies are working along similar lines. In general the membership of the newer organization is not so broadly representative as is that of the older one and its membership is confined to the New England states. While the New England Board has no official connection with the National Industrial Conference Board, the medical investigator of the National Industrial Conference Board is the secretary-treasurer of the New England Conference. The work of the members of the New England Conference as a whole is more clinical than administrative, and their deliberations have been conducted accordingly. This group has published two reports on subjects of importance to medicine in industry, one dealing with detailed methods of making physical examinations of men and women seeking industrial employment,[3] the other a report on the nature and extent of optical service in industry.[4]

As stated earlier in this paper, organized interest in medical work in industry on the part of employers is not largely in evidence. But individual employers are taking an increasing interest in the subject and are introducing medical work, or extending it if already functioning in the plant. Physical examinations with their benefits to both employer and employed are becoming more prevalent. An increasing number of public health and social agencies are taking an interest in this work, as is shown by other reports given at this meeting. With these facts before us it would seem to be a safe assumption that in a comparatively short time organized industry will generally recognize this newer adjunct to prosperity as an integral part of all good business.

REFERENCES

[1] Research Report No. 34, Health Service in Industry; Research Report No. 37, Cost of Health Service in Industry; Research Report No. 61, Workmen's Compensation Laws in the U. S.—The Medical Aspect; Special Report No. 22, The Physician in Industry: A Symposium. Special Report No. 30, The Relation of Medicine to Industry.

[2] Special Report No. 31, Uniform Medical Provisions for Workmen's Compensation Acts in the United States.

[3] *The Nation's Health*, Vols. 5, p. 45, Jan. 15, 1923.

[4] *Jour. A. M. A.*, Vol. 80, p. 1870, June 23, 1923.

ABSTRACT OF DISCUSSION

WOODS HUTCHINSON, M.D.

Up to fifteen years ago almost any factory was like any other factory—a man working hard at a dirty job for a mere subsistence, making just enough to keep on living, so that he could come back to his grind of dirty work in the morning and with no prospect beyond that. But the situation has changed! We now have a situation in the factories which to an outside observer is most gratifying. The factories of today are well lighted and well venti-

lated, better than many private houses. There has been wonderful progress all along the line.

The man who has been responsible for the greatest amount of this improvement in health conditions has been the worker and his unions. He is the man who has driven the thing by force of interest; he is the one who keeps up the inspection. Then the employer is also doing magnificent work. He puts the doctor in as a kind of repair man to patch up the human machines which may happen to break down. The employer saw that it paid.

But the thing that has done most in reducing the accident death rate and improving the health conditions in industry has been neither the establishment of sanitary conditions, nor the getting rid of poisonous gases and dust, but the *shortening of the working hours and the raising of the wages.* We should insist upon bringing up these standards. Sixty per cent of the working men are still in the smaller plants where the doctor can bring his personal influence to bear. Shorter hours and higher wages will improve conditions. The 150 deaths a year from lead poisoning and gases in the United States does not compare with the 100,000 deaths from tuberculosis caused from insanitary living conditions and overcrowded houses. We have been playing with the little things rather than concentrating upon bigger things which do with public health.

A certain factory in your city which I have kept visiting from time to time is the famous Ford factory. There are some very remarkable things there which are unusually hopeful. For instance, the establishment of a permanent policy that after a certain date no applicant for employment shall be refused on account of his physical condition. A classification has been carefully made of all the jobs in the factory and of the strength and condition of the man who could fill each individual position, and they take into that factory those who are unable to make a living for themselves elsewhere and pay them full wages. Henry Ford had been told by some of his advisors that would be a good thing to establish a sanatorium in Arizona for his tuberculous workers because of the warm dry climate. He investigated the temperature and humidity of his steel cooking room and found it was practically the same as that of Arizona and decided that he had Arizona right in his own factory. He sent his tuberculous cases into his steel cooking room, with the windows wide open and set them to making castings, which he adjusted to the strength of the men. They were about 40 in number, and when I saw them they had been there nine months without a death or a prolonged absence from work. There are now about 1,100 consumptives employed at the factory, part of them (open cases) in a special building practically in the open air. Anyone who can put health in industry on such a basis as that is deserving of the admiration of his fellow men. Henry Ford is not just a maker of machines, he is a maker and manufacturer of men. He has probably done more for the improvement of health and happiness of the community than any doctor or member of this Association. I asked about pensions. He does not give pensions, but he gives jobs to every man up to seventy-five and over, if he is able to be about. Widows are given a job in the magneto department, which provides them with wages enough to liberally support their families.

What more can we as physicians do in the direction of pushing along this work of the prevention of disease? I wish we were half as well organized and our relationship with one another as cordial as that which exists in Mr. Ford's plant. There is no word of dislike there. Each does his own work. In the medical profession we have many different opinions; such bitter jealousy, we fight with one another; we are not organized as we should be for the aggressive attack upon disease. We should not stand upon our dignity but rush out to meet disease instead of waiting tamely till it has attacked a member of one of our families. We should not be afraid to give a vigorous word of warning for fear of people thinking we are looking for a fee.

We should attend our patients by the year for an annual salary so that we could devote the very best of our powers to keeping our patients well instead of curing them after they are sick. We have been working too exclusively for the wealthy practice so that we can get large fees from the rich. We have picked the wrong horse! Let us stand by the working people and they will stand by us. They furnish the back-bone of our practice. Let us stand shoulder to shoulder. Follow your patients into the place where they work and insist that it be made sanitary, hours shortened and wages raised. The best medicine for our worker patients and their families is shorter hours and higher salaries.

GEORGE H. WOOD, M.D.

This account of safety work being done voluntarily by employers is most interesting and encouraging. Voluntary work of this kind has a decided advantage over work imposed by legal enactment. Where the work is voluntary it is done with a definite purpose to accomplish certain results. Legal enactment often comes to mean little or nothing but routine processes, and accomplishes little except to add to the expense and difficulties of industry. Too many legal regulations should be avoided. We have so many now that it is difficult for a good citizen to be law-abiding.

I have observed two classes of employes in regard to their attitude toward welfare work. First, there is the class, largely composed of foreigners, who will grasp at anything if they get it for nothing. Second, there is the class in which the typical American is predominant, which is characterized by independence, pride and a desire for only what belongs to them. The members of this class are the most apt to claim their right of selection of a physician. While this "American" attitude is undoubtedly becoming less, I hope it will never disappear. I believe that confidential medical matters should stop with the company physician and not become part of the general records of the employer or insurance company. The rule of some companies that their physician shall report all findings from physical and medical examinations to another department, such as the employment or the legal departments is absolutely unethical and in my opinion indefensible. The employer should trust his physician absolutely in approving or disapproving, on medical grounds, all applications for employment or claims for disability. Otherwise, he should get rid of the physician whom he cannot trust in these confidential matters. When the fact becomes known to the employes that their employer respects their right to confidential communication with the company's physician it greatly increases their confidence in physical examination and health work.

We must always remember that there is a difference between moral right and legal rights. Courts have ruled that it is the duty of boards of directors of corporations to manage their business for the benefit of the stockholders and that, in general, they have no right to take money which might go to make dividends for the stockholders and use it in making donations to the employes, simply because it is done under the name of welfare work.

A. B. EMMONS, 2ND, M.D.

My experience with industrial hygiene managed by employes is with certain mercantile houses, or stores. Here we find that perhaps one-tenth of the workers are "executives." It is necessary to get these executives to set examples. Stores employ a rather selected group having more formal education on the average than the industrial groups usually considered. It is desirable to reduce the distinction between the executives and the actual workers. A prominent store keeper pointed out to me that the story of arousing employes to an interest in self-government by a mutual aid association is a long one and must be patiently continued by executives for a considerable period of time before employes can be trusted to take things over for themselves. As an illustration, it is difficult to get mutual benefit associations to work satisfactorily. Workers require compulsory membership in such associations. The Macy Company of New York are proceeding on this basis and are now trying to get the employes, which means everyone, to take matters over entirely. Report No. 65 of the National Industrial Conference Board reviews 382 benefit societies. They conclude in regard to company control as follows: "The weight of opinion of employers is apparently in favor of delegating to the employes as much responsibility as they can assume, consistent with the successful operation of an association."

EFFECT ON INFANTS OF HIGH PREPASTEURIZATION COUNTS*

J. H. SHRADER, PH.D., AND J. C. SWENARTON, D.Sc.

Director, Bureau of Chemistry and Food, and Assistant Director, Bureau of Bacteriology, Baltimore City Health Department

IN THE SUMMER of 1922, it was noticed that the average bacteria count of the milk entering Baltimore was much higher than in the preceding year. This was regretted on general principles, but occasioned no particular concern, because all of the milk was to be effectively pasteurized and there was observed no accompanying increase in the average bacterial content of the same milk when sampled from the delivery wagons on the streets.

As gauged by inspectors' reports and analyses of milk, the handling of the milk in the city, particularly the pasteurized variety, was markedly better than ever before. However, in the early winter of 1923, Dr. Mary Sherwood, Director of the Bureau of Child Welfare, informed us that during the summer of 1922, there had been a surprising and inexplicable increase in the mortality rate of infants under two years of age from gastroenteritis, and inquired if any condition in the milk supply could possibly be accountable.

It was apparent to us that in view of the improved quality of the pasteurized supply (comprising over 98 per cent of the milk consumption of the city), the only baneful factor that was at all apparent was the increase in the bacterial content of the milk before it was pasteurized. Reluctant as we were to attribute any determinate significance to this observation, we could not afford to dismiss it without further investigation. Such is the basis for our taking up a matter which has been declared so convincingly to constitute certainly a minor and possibly an almost negligible factor in the mortality of infants.

That the bacterial content of a subsequently well pasteurized milk has an effect upon the health of infants has been clearly shown by Drs. Park and Holt [1] in New York City. As a result of observations upon several hundred bottle-fed infants, they found that the primary factors in producing summer diarrheas were heat and improper care, and that the bacterial quality of the milk exerts a secondary effect, except that when the bacterial contamination is extreme or when pathogenic organisms are present the deleterious effect is more marked.

They found that the use of milk which contained from 1,000,000 to 25,000,000 organisms per c.c., and then was pasteurized, was accompanied by a distinct increase in the amount of diarrheal disease. Among their conclusions, they state that with milk which is taken raw, the fewer the number of bacteria present, the better the results. When milk is heated above 170° F., most of the bacteria and apparently some of the poisonous products are destroyed. Bacteria present to the extent of many millions before heating were decidedly deleterious.

Since then, Schölberg and Wallis [2] have thrown light on the biochemistry involved in the mixed bacterial contamination of market milk. They found that

* Read at the Joint Session of the Child Hygiene and Food and Drugs Sections of the American Public Health Association at the Fifty-third Annual Meeting at Detroit, Michigan, October 22, 1924.

such milk when tested with the biuret reaction showed the presence of peptones and albumoses and some intermediate transitory unidentified product, whereas milk with low bacteria counts reacted negatively thereto. They isolated several strains, notably Coliform bacteria and some spore-formers, and found that these organisms when inoculated into milk gave rise to intermediate products which reacted specifically to the biuret test. Moreover, they showed that this intermediate decomposition product exerted a deleterious effect on the pancreas, which resulted thereby in a disturbed metabolism with attendant diarrhea.

One of the most striking contributions of Schölberg and Wallis was the announcement of the *transitory* character of the intermediate decomposition product which disappears after about forty-eight hours and hence is not present in the finished products of bacterial action on milk. Their investigation was quite complete and was carried all the way through from tests on the milk to autopsy findings on infants who succumbed to summer diarrhea.

From the above, it is clear that the clinical work of Park and Holt, limited as it was in the number of cases, served to place the emphasis on the secondary but nevertheless more or less real relation of milk to summer diarrheas in infants. Moreover, the work of Schölberg and Wallis gave experimental demonstrations of the biochemistry involved. Their data was lacking on the application of such findings to city-wide conditions. The following observations are presented in the light of these latter considerations.

In the prosecution of this investigation, it has been necessary to scrutinize our vital statistical data with regard to the reliability of the death certificates of the attending physicians. Some few cases reported as gastroenteritis have been found to have had no involvement of bowel disturbance at all—and hence to be incorrectly reported. Dysentery and gastroenteritis reportings seem to be inextricably confused. This has been mentioned by Davison * and discussed later by Ellicott.** Accordingly, all epidemiological data used in this investigation include both reported dysentery and gastroenteritis, numbers 16B and 113 respectively of the International List of Causes of Death. Morbidity data is preferable by far, but since such reportings are irregular and so very incomplete it was deemed advisable to limit our data to deaths. In order to place all data on a comparable basis, the mortality data in Chart I is based on the reported cases of gastroenteritis and dysentery collectively although these are in error within the above limits. No bacterial examinations of stools were made.

The temperature curves were drawn from the average mean temperature records for Baltimore, as published by the United States Department of Agriculture.

The bacteria content of the farmer's milk entering Baltimore was determined by the plain agar plate method using the official methods of the American Public Health Association, and averaging arithmetically the results of samples which numbered approximately six hundred per month in 1922 and 1923, and about fifteen hundred samples per month in 1924.

The bacterial counts on pasteurized milk are weighted Levy averages (according to output of dairy) of samples taken from milk delivery wagons on the streets.

To throw further light on the possible significance of any relationship which may be indicated between bacteria content and bowel disturbances, samples of milk were taken during the season of 1924 at all the city plants both immediately before and immediately after pasteurization, all of which were plated on plain agar, milk powder agar,[3] and

* Recent address at the Johns Hopkins School of Hygiene.

** The incidence of dysentery in Baltimore. Address before the Baltimore Medical Society, Oct. 10, 1924.

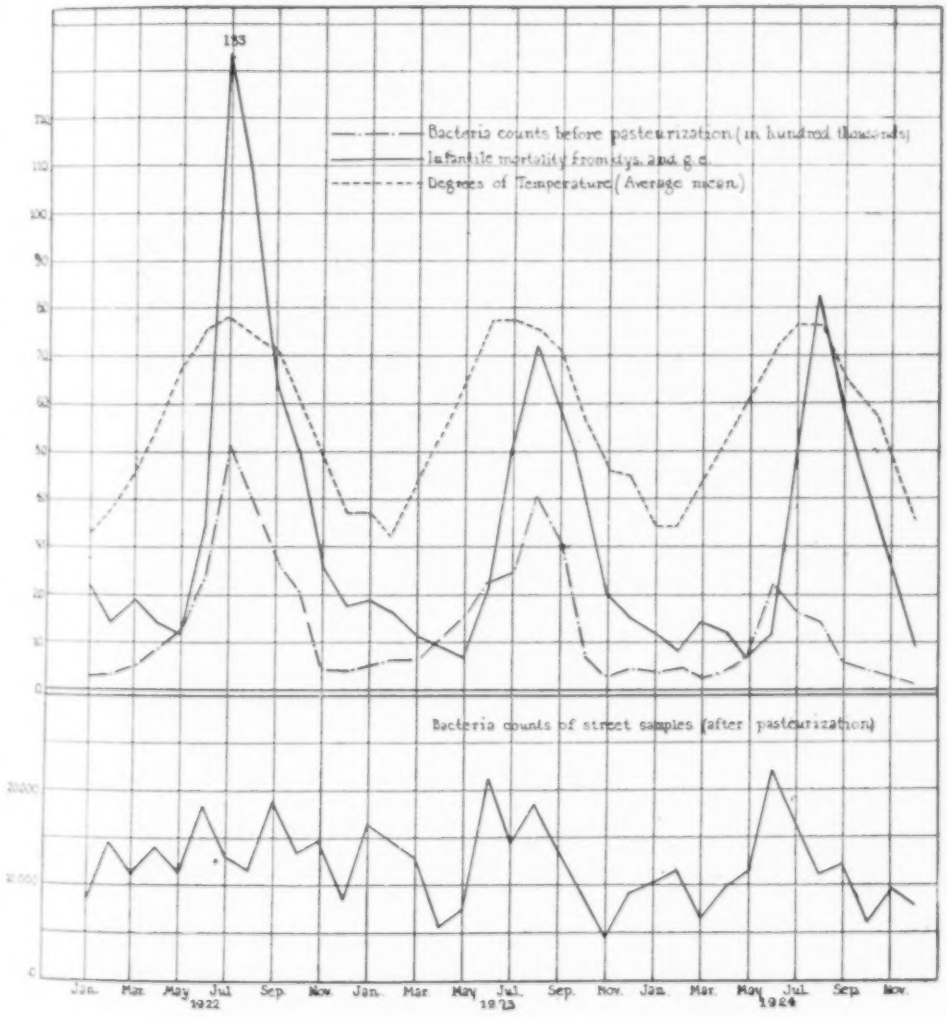
run for presumptive B. coli and anaerobic spores. Bacteria counts were also made on all samples by the Breed direct count method. All prepasteurized samples were examined by the official methylene blue method,[4] and toward the end of September by the catalase test,[5] and the biuret reaction.[2] All of this data will be presented in detail, together with indicated relationship, practicability and significance, in forthcoming publications.

The data collected as above described was plotted on coördinate paper as presented in Chart I. It is strikingly apparent that in the summer of 1922, the peaks of bacterial content, temperature and mortality coincide; in the summer of 1923, the peaks of bacterial content of milk and of mortality coincide while that of temperature is two months previous thereto; in the 1924 season, the temperature and mortality peaks coincide fairly well while the bacterial content seems to have been eliminated as a factor in so

CHART I

REPORTED CASES OF GASTROENTERITIS AND DYSENTERY IN BALTIMORE IN 1922–1924, INCLUSIVE

Bacteria Temperature Mortality


183
Bacteria counts before pasteurization (in hundred thousands)
Infantile mortality from dys. and g. e.
Degrees of Temperature (Average mean.)
Bacteria counts of street samples (after pasteurization)
Jan. Mar. May Jul. Sep. Nov. Jan. Mar. May Jul. Sep. Nov. Jan. Mar. May Jul. Sep. Nov.
1922
1923
1924

far as the average total count is concerned.

Before discussing this matter further, it should be pointed out that the bacterial content of farmers' milk when sampled as it reached the city did not at all indicate the total maximum bacterial content and hence the degree of contamination from bacterial metabolic by-products. Even after a season of educational agitation and regulatory pressure, we find that the bacterial content of milk in summer weather may increase 100 per cent in the several hour interim (9 to 12 o'clock) between arrival at the city (sampling point in 1922 and 1923) and application of pasteurization (present prepasteurization sampling point).

With such a material increase as above indicated after so much agitation, one can readily conceive that in the preceding years the increase must have been materially greater. Thus, in 1922 the recorded average bacterial counts are not anywhere near the total actual bacterial content of the milk at the time of pasteurization. In the light of some tests made in 1924 the incoming milk contains no more than half of the final bacterial content which develops before the further growth is checked by pasteurization. Therefore, it is evident that the maximum monthly average bacterial content of the milk in 1922 was materially over 10,000,000 to 12,000,000 bacteria per c.c.; in 1923, it must ha e been over 8,000,000; while in 1924, it never rose above 2,200,000.

A comparison of the gastroenteritis and dysentery mortality rate of Baltimore to that of other cities is shown in Table I

This table shows that the rate for Baltimore in 1922 was about 58 per cent above the average of the other cities but in 1923 and 1924 it was 30 per cent and 39 per cent respectively above these averages. The high rate of Baltimore in 1922 can therefore be presumed to be due to some factor or factors which are not in common with other cities.

Most of the vital statistics data presented in this paper have consisted only of mortality figures for the reason that this was the only data available. Enteritis morbidity statistics are desirable and in fact are legally required, but compliance is so very meager that their epidemiological significance is valueless. Beginning with the summer of 1924, our nurses have visited all homes where children died from dysentery and gastroenteritis and secured the histories of all mortality cases which used fresh cows' milk (excluding from consideration all breast-fed and canned milk-fed cases). Thus it becomes possible to plot the dates of onset of bowel disturbances which may be supposed to constitute the more delicate indication of any possible etiological relation of quality of milk to the health of children. No bacterial examinations of stools were made.

TABLE I

DEATHS FROM GASTROENTERITIS AND DYSENTERY DURING THE MONTHS OF MAY, JUNE, JULY AND AUGUST

City	1922 Deaths	1922 Deaths per 100,000 population	1923 Deaths	1923 Deaths per 100,000 population	1924 Deaths	1924 Deaths per 100,000 population
Boston, Mass.	65	8.63	52	6.74	67	8.62
Rochester, N. Y.	22	7.06	15	4.71	7	2.15
New York, N. Y.	708	12.12	601	10.13	389	6.48
Newark, N. J.	91	21.07	54	12.30	50	11.22
Philadelphia, Pa.	337	17.78	198	10.29	185	9.48
Baltimore, Md.	284	37.26	150	19.39	148	18.86
Washington, D. C.	47	10.74	62	14.17	47	10.74
Richmond, Va.	37	20.74	48	26.51	30	16.32
Norfolk, Va.	28	22.41	14	8.80	11	...
Savannah, Ga.	19	21.67	34	38.00	26	27.40
Average of all the above cities		17.95		15.10		12.36
Average of above cities except Baltimore		15.80		14.63		11.55

GASTROENTERITIS AND DYSENTERY ANNUAL MORTALITY RATE FOR CHILDREN UNDER TWO YEARS PER 100,000 POPULATION

1922	66.7	1923	43.9	1924	41.8

In Chart II, there are presented the maximum and average mean temperatures for three-day periods, average bacteria counts on plain agar by weekly periods, and the data of onset of illness in all mortality cases of dysentery and gastroenteritis. The curve showing the same data in comparison with milk powder agar is not presented because the milk powder agar curve very closely parallels the plain agar curve in location of peaks and differs only to the extent that the peaks are more pronounced.

On the basis of the clinical pictures as presented in the reports of the nurses after visiting all fatal cases, the onsets of dysentery and gastroenteritis are graphically presented in Chart III.

CHART II

VARIATIONS IN BACTERIA COUNTS IN MILK, MORTALITY FROM GASTROENTERITIS AND DYSENTERY, AND DAILY TEMPERATURE IN BALTIMORE DURING THE SUMMER OF 1924

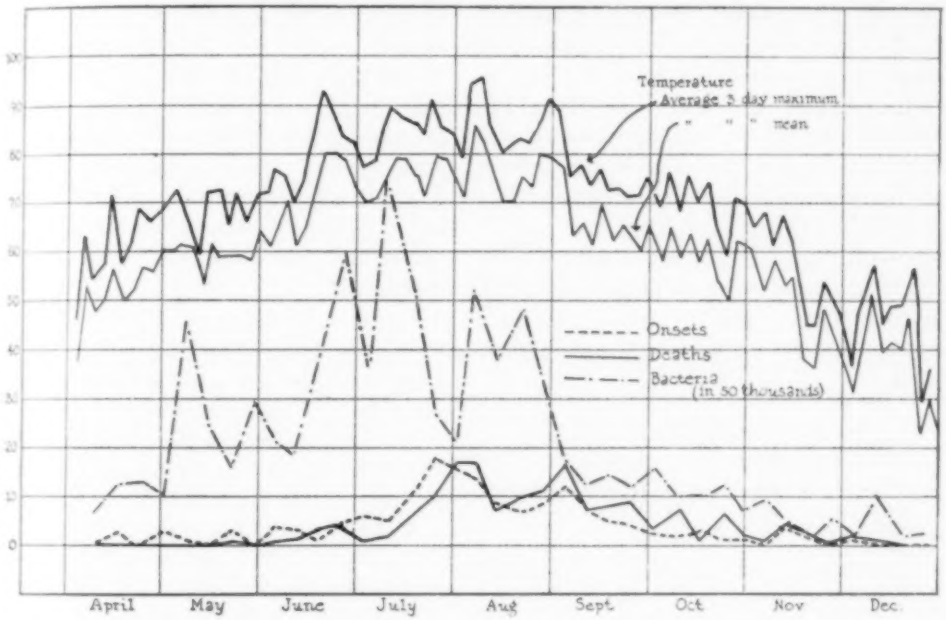
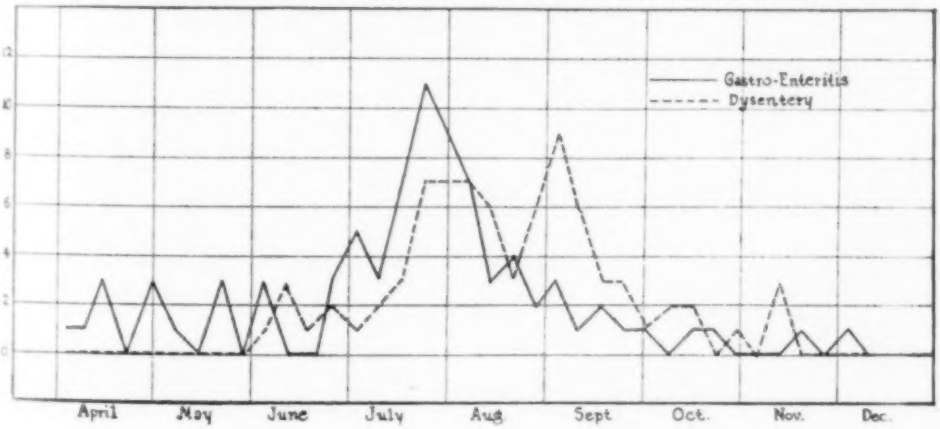


CHART III

ONSETS OF CASES OF DYSENTERY AND GASTROENTERITIS IN BALTIMORE DURING THE SUMMER OF 1924

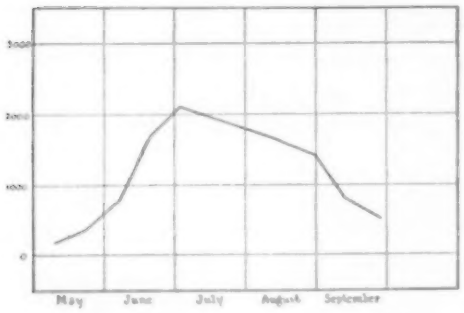


It is seen that although cases of dysentery and gastroenteritis occur more or less frequently over the entire season, there is a preponderant grouping of dysentery about the first of August and the first of September, while gastroenteritis preponderates in the last week of July. In this connection it is noteworthy that closely associated with this grouping of cases is the incidence of the peaks of the curves of B. coli, and to a less extent, of the peptonizers and alkali formers in the milk before pasteurization. These matters will be discussed in detail in a forthcoming paper.[6]

In view of the widely prevalent belief that the fly bears a close relation to summer infantile diarrheas, the incidence of the fly wave was determined in 1924 by placing twenty-five fly traps,[7 8] in as many fire-engine stations over the city, distributed according to density of population. The "catch" was weighed each week and the total weights plotted in Chart IV.

CHART IV

WEIGHT IN GMS. OF FLIES TRAPPED



DISCUSSION

From the above, it is evident that in 1922 there was an unusually high infantile mortality rate in bowel disturbances, and concomitantly there was an unusually large number of bacteria in the milk prior to pasteurization. In 1923, both conditions improved. During the spring and early summer in 1924, both the total bacterial content of the milk and the infantile mortality showed marked improvement over the condition in the preceding year, but as the season progressed the improvement in health conditions seemed to be lost.

It is generally believed that one of the chief causes of infantile summer bowel disturbances is the relatively high temperature. By reference to the temperature curves it is seen that in 1922 this theory finds equal support with a bacterial etiology in the fact that the peaks of temperature and bacterial content and mortality coincide with more or less agreement. But in 1923 it is noteworthy that the period of maximum temperature lay materially earlier than the peak of infantile illness, whereas the bacteria peaks coincide with the mortality, thus indicating a closer relationship of mortality to bacteria as the etiological factor than to temperature. In 1924, the bacterial etiology does not seem to be consistent with this idea. Thus, in two years the peaks of mortality and bacterial content coincide and in one year they do not. Likewise in two years, mortality and temperature coincide and in one year they do not.

If there is any determinate relationship between bacterial content of the milk and infantile bowel disturbances, then one would expect a greater reduction in mortality in 1924 than was actually effected in view of the marked improvement in the total bacterial quality of the milk, but this is not the observed fact. However, in a forthcoming publication (loc. cit.) we shall show that our regulatory control which so greatly affected the total bacterial count, did not operate to very effectively control the content of B coli.

By reference to Chart II, it is apparent that when allowance is made for the incubation lag, the onsets follow bacterial peaks at best as well as they do temperature peaks.

The single peak in the fly incidence coming as early as it does, seems to bear no relationship to any of the matters dis-

cussed. However, these observations cover only one season.

SUMMARY

Data from other workers have been quoted which show that the baneful effect upon infants of milk of high prepasteurized bacterial content has been recognized and elucidated. Data are given covering observations in Baltimore of three years' duration, in the first two of which this hypothesis seems to be supported while in the last year it is not.

REFERENCES

1. Studies from the Rockefeller Institute for Medical Research, Reprints, Vol. 2, 1924; *Arch. Pedia.*, Dec., 1903.
2. Schölberg, H. A., and Wallis, R. L. McK. Chemical changes produced in milk by bacteria and their relation to the epidemic diarrhea of infants. Local Government Board. Medical Officer's Report, 1909–1910, vol. 39, pp. 504–43.
3. Ayres, S. H. and Mudge, C. S. Milk powder agar for the determination of bacteria in milk. *J. Bacteriol.*, 5, 565–588 (1920).
4. Standard Methods of Milk Analysis of the A.P.H.A. and A.O.A.C., 1923, p. 17.
5. Van Slyke, L. L. Modern methods of testing milk and milk products, p. 160.
6. Swenarton, J. C., and Shrader, J. H., Comprehensive Bacteriological Study of the Milk Supply of Baltimore.
7. Bishop, F. C. Fly Traps and Their Operation, Bull. 734, U. S. Dept. of Agriculture.
8. Niven, J. Manchester Health Officer's Reports (1904–1908): Reference from Reprint No. 155, *Pub. Health Rep.*, Dec. 5, 1913, edition of May, 1923.

THE STANDARDIZATION OF TYPHOID-PARATYPHOID VACCINE*

JOSEPH W. SMITH, JR.
Captain, Medical Corps, United States Army

ESSENTIALLY there are but two ways in which to standardize vaccines. One way is by an actual enumeration of the bacteria in the suspension and the other is by an actual determination of the weight of dried bacterial protein in the vaccine. Opacimetric, nephelometric and volumetric methods all depend upon the previous determination of standards by one or the other of the two basic methods.

The cytometric method, or actual enumeration of the bacilli in a unit volume of the suspension may be applied by Wright's method or by the use of the bacteriocytometer—the Helber counting chamber. Wright's method is susceptible of a number of serious errors. These are apt to intrude even when the greatest care is exercised. The method is laborious and time-consuming and the tendency is, for the average worker, to count a few fields in deference to pseudoscientific accuracy and then to make a judicious guess, with or without much reference to his count. The bacteriocytometer, on the other hand, may be employed with almost as great exactness as the hemacytometer and with almost as great ease. Its proper use is very easily learned. In trained hands it yields ordinarily uniform results. In brief, it is an exact instrument which yields exact results. In a choice between its use and the use of Wright's method, the bacteriocytometer is to be preferred.

As compared with either of the cytometric methods, the gravimetric method appears to afford a truer index of the contents of the vaccine. It is a measure of all of the bacterial protein of the vaccine. The counting methods consider only the particulate protein in suspension. They fail to account for the protein in solution. They likewise fail to envisage variations in size of organisms, which variations are sometimes very great. The dissolved protein is certainly a factor of importance in the ordinary bacterial vaccine prepared in the usual manner. We have very recently begun a study of the

* From the Department of Laboratories, Army Medical School, Army Medical Center, Washington, D. C. Read before the Society of American Bacteriologists at the Twenty-sixth Annual Meeting at Washington, D. C., December 30, 1924.

gravimetric method, in conjunction with nitrogen estimations, but have no data for presentation at this time.

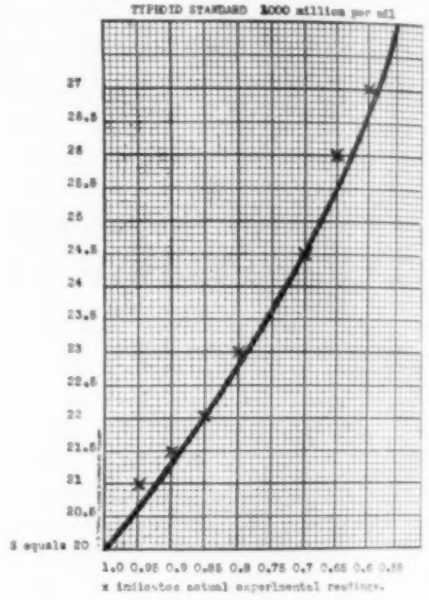
The present method of standardizing the official United States Army typhoid-paratyphoid vaccine, originally described by Russell, Nichols and Stimmel in 1920,[1] is to prepare standards cytometrically, using the Helber chamber, and to employ those standards with which to compare vaccine suspensions nephelometrically. The chamber which we employ is the Helber-Levy chamber, of the Bürker type, made by the Levy method of construction. The cover-slip is the Hausser reinforced precision cover-slip. Both chamber and cover-slip are certified correct by the Bureau of Standards.

A careful numerical estimation is made of the bacterial content of a given suspension of washed bacilli. The suspension is then so diluted with formalinized buffered salt solution as to contain exactly 1000 million bacilli per mil. It thus becomes the typhoid, or paratyphoid "A" or paratyphoid "B" standard suspension. New standard suspensions are made at intervals of two or three months. This is probably more often than is necessary. Standards made six months ago show no changes and check perfectly with recent standards. We do not know how long they will last.

In standardizing the monovalent vaccines, a sample is removed from each "section" bottle and compared in the nephelometer with its appropriate standard. The nephelometer which we use is the latest model Kober instrument. A "section" is composed of 50 Kolle flasks, and the "section" bottle contains the salt solution suspension of the growths on those 50 Kolle flasks. Each such suspension is made up to 2 liters—that is, the growths on 50 Kolle flasks are suspended in exactly 2 liters of buffered salt solution—before the sample is removed for nephelometry. When the comparisons are made the ratios are read directly from standard curves which are easily plotted in the manner described by Dunham in 1920.[2] The monovalent vaccines are then properly diluted with buffered salt solution and suitably trikresolized.

As a final check on the concentration of the finished product, the mixed "triple" typhoid or typhoid-paratyphoid vaccine, samples of each new lot are

FIGURE 1: STANDARD NEPHELOMETRIC CURVE, PLOTTED IN THE MANNER OF DUNHAM



counted cytometrically and are also estimated nephelometrically against a "triple" standard, made by combining monovalent standards in proper proportions. The finished product contains per mil 500 million typhoid bacilli, 250 million paratyphoid "A" bacilli and 250 million paratyphoid "B" bacilli.

We shall not go, in detail at this time, into a comparison between vaccines standardized by various methods. It will be sufficient here to state that vaccines differ materially in their concentration depending upon the method which is used for standardizing them. We have gone over some of our vaccines made in 1911 which were standardized by Wright's method and which were supposed to contain 1000 million typhoid bacilli per mil; we find them to contain about 500 to 750 million

per mil. Again, we have examined samples of vaccine made in 1922 and 1923, and which were standardized nephelometrically, using less accurate standards, however, than those which we now employ, and which were supposed to contain 2000 million bacilli per mil. We find that some of them contain as many as 3000 to 3500 million per mil. Some determinations are set down at this point which will serve to give a definite idea of the bacterial content of our official typhoid-paratyphoid vaccine. A few counts of some samples from other sources are given also. We feel that the counts recorded in Table I, Official Typhoid-Paratyphoid Vaccine, United States Army, reveal a very satisfactory uniformity. On the contrary, it is seen in Table II, Samples from Various Other Sources, that, according to our methods of counting, all of these other vaccines contain less organisms than are called for by the labels.

The discrepancies are unquestionably due to the use of differing methods of standardization of varying accuracy. It may be noted here that autolysis is a negligible factor and cannot be used as an explanation of these variations from the marked content. It is believed that more accurate methods of standardizing vaccines should be generally adopted. Thereafter some readjustment of dosage will probably be necessary.

TABLE I

OFFICIAL TYPHOID-PARATYPHOID VACCINE, U. S. ARMY
Counts upon identical samples on different dates

Sample Number	Theoretical Content	July 1, '24 Cytometer	Sept. 2, '24 Cytometer	Sept. 8, '24 Nephelometer	Oct. 21, '24 Cytometer	Oct. 21, '24 Nephelometer
300	1000 million	1200	850	1162	1095	1042
301	" "	1000	1000	1088	1100	1057
302	" "	900	850	1162	870	1042
303	" "	1125	750	1275	965	1102
304	" "	925	900	1200	950	985
305	" "	800	1100	1073	1035	1065
306	" "	1100	1250	1130	1050	1032
307	" "	....	975	1050	825	1027
308	" "	....	1150	1200	850	1089
309	" "	....	1000	1050	900	1062

TABLE II

SAMPLES OF TYPHOID-PARATYPHOID VACCINES FROM VARIOUS SOURCES
Each figure represents the count of a different sample. Thus, of Commercial No. 2, three different samples were examined, each one on a different date.

Sample	Theoretical Content	Mar. 7, '24 Cytometer	Sept. 10, '24 Cytometer	Sept. 26, '24 Cytometer
Commercial No. 1	2000 million	1100	950	....
Commercial No. 2	2500 "	875	1725	1250
Commercial No. 3	2500 "	....	925	....
Commercial No. 4	2000 "	200	....	475
Foreign (municipal)	1000 "	....	475	....
Foreign (military)	2250 "	....	....	1275

REFERENCES

1. Russell, Frederick F., Colonel, M.C., U.S.A., Nichols, Henry J., Major, M.C., U.S.A., and Stimmel, Clarence O., Captain, M.A.C., U.S.A. Directions for Making Triple Typhoid Vaccine, with Introduction. *The Mil. Surgeon*, Oct., 1920.

2. Dunham, George C., Major, M.C., U.S.A. A Nephelometric Method of Estimating the Number of Organisms in a Vaccine. *J. Immunol.*, Vol. V, No. 4 (July), 1920.

THE AMERICAN PUBLIC HEALTH ASSOCIATION

370 SEVENTH AVENUE, NEW YORK CITY

GOVERNING COUNCIL

OFFICERS, 1924-1925

President, HENRY F. VAUGHAN, D.P.H., Detroit, Mich.
First Vice-Pres., OSCAR DOWLING, M.D., Shreveport, La.
Second Vice-Pres., DANIEL A. MCCLENAHAN, M.D., Hamilton, Ont.
Third Vice-Pres., POWHATAN S. SCHENCK, M.D., Norfolk, Va.
Treasurer, LOUIS I. DUBLIN, Ph.D. New York City.
Executive Secretary, HOMER N. CALVER, New York City.

ELECTIVE COUNCILLORS

Terms Expiring 1925

WILMER R. BATT, M.D., Harrisburg, Pa.
F. G. CURTIS, M.D., Newton, Mass.
W. M. DICKIE, M.D., Sacramento, Cal.
L. I. HARRIS, M.D., D.P.H., New York City
JAMES A. HAYNE, M.D., Columbia, S. C.
A. J. MCLAUGHLIN, M.D., St. Louis, Mo.
ROGER G. PERKINS, M.D., Cleveland, O.
M. P. RAVENEL, M.D., Columbia, Mo.
JAMES ROBERTS, M.D., Hamilton, Ont.
GEORGE C. RUHLAND, M.D., Syracuse, N. Y.

Terms Expiring 1926

WILLIS P. BUTLER, M.D., Shreveport, La.
A. J. DOUGLAS, M.D., Winnipeg, Man.
LEE K. FRANKEL, Ph.D., New York City
GEORGE W. FULLER, New York City
J. C. GEIGER, M.D., Chicago, Ill.
OMER R. GILLETT, M.D., Colorado Springs, Colo.
E. C. LEVY, M.D., Richmond, Va.
W. S. RANKIN, M.D., Raleigh, N. C.
C. E. TERRY, M.D., New York City
HENRY F. VAUGHAN, D.P.H., Detroit, Mich.

Terms Expiring 1927

HERMAN BUNDESEN, M.D., Chicago, Ill.
WILLIAM HALL COON, M.D., Bridgeport, Conn.
DON M. GRISWOLD, M.D., D.P.H., Iowa City, Iowa
F. E. HARRINGTON, M.D., Minneapolis, Minn.
EDWIN O. JORDAN, Ph.D., Sc.D., Chicago, Ill.
FRANCIS X. MAHONEY, M.D., Boston, Mass.
FRANK J. MONAGHAN, M.D., New York City
C. C. SLEMONS, M.D., Grand Rapids, Mich.
MARGARET K. STACK, R.N., Hartford, Conn.
ROBERT SPURR WESTON, Boston, Mass.

REPRESENTATIVES OF AFFILIATED STATE HEALTH SOCIETIES

WM. G. KIRSCHBAUM, Massachusetts Association of Boards of Health
R. M. OLIN, M.D., Michigan Public Health Association
EDWARD GUION, M.D., New Jersey Sanitary Association
POWHATAN S. SCHENCK, M.D., Virginia Public Health Association

SECTION OFFICERS

Public Health Administration

Chm., CHARLES V. CRASTER, M.D., D.P.H., Newark, N. J.
Vice-Chm., GUY L. KIEFER, M.D., Detroit, Mich.
Secretary, STANLEY H. OSBORN, M.D., C.P.H., Hartford, Conn.

Laboratory

Chm., NORMAN MCL. HARRIS, M.B., Ottawa, Can.
Vice-Chm., LEONARD M. WACHTER, Albany, N. Y.
Secretary, JOHN F. NORTON, Ph.D., Chicago, Ill.

Vital Statistics

Chm., S. G. THOMPSON, D.P.H., Jacksonville, Fla.
Vice-Chm., ——— ———
Secretary, JOHN O. SPAIN, Washington, D. C.

Sanitary Engineering

Chm., LANGDON PEARSE, Winnetka, Ill.
Vice-Chm., ABEL WOLMAN, Baltimore, Md.
Secretary, GEORGE W. SIMONS, JR., Jacksonville, Fla.

Industrial Hygiene

Chm., HENRY FIELD SMYTH, M.D., Philadelphia, Pa.
Vice-Chm., A. J. LANZA, M.D., New York City
Secretary, E. R. HAYHURST, M.D., Columbus, O.

Food and Drugs

Chm., F. C. BLANCK, Ph.D., Washington, D. C.
Vice-Chm., H. W. REDFIELD, Ph.D., New York City
Secretary, JAMES O. JORDAN, Ph.G., Boston, Mass.

Child Hygiene

Chm., CHARLES H. KEENE, M.D., Harrisburg, Pa.
Vice-Chm., WM. J. BELL, M.B., Toronto, Canada
Secretary, C. E. TURNER, C.P.H., Cambridge, Mass.

Health Education and Publicity

Chm., JAMES A. TOBEY, New York City
Vice-Chm., MARJORIE DELAVAN, Lansing, Mich.
Secretary, EVART G. ROUTZAHN, New York City

Public Health Nursing

Chm., ALTA E. DINES, R.N., New York City
Vice-Chm., MARY LAIRD, R.N., Rochester, N. Y.
Secretary, AGNES MARTIN, R.N., Milwaukee, Wis.

EXECUTIVE BOARD

LOUIS I. DUBLIN, Ph.D., New York City
GEORGE W. FULLER, New York City
EDWIN O. JORDAN, Ph.D., Sc.D., Chicago, Ill.
E. C. LEVY, M.D., Richmond, Va.
WILLIAM H. PARK, M.D., New York City
M. P. RAVENEL, M.D., Columbia, Mo.
JAMES ROBERTS, M.D., Hamilton, Ont.
GEORGE C. RUHLAND, M.D., Syracuse, N. Y.
HENRY F. VAUGHAN, D.P.H., Detroit, Mich.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

EDITORIAL COMMITTEE

MAZYCK P. RAVENEL, *Chairman* HOMER N. CALVER, *Managing Editor*

C. C. YOUNG, LOUIS I. DUBLIN, PH.D., E. R. HAYHURST, M.D., TALIAFERRO CLARK, M.D., ABEL WOLMAN, C.E., HARRY W. REDFIELD, PH.D., ARTHUR TOMALIN, JAMES A. TOBEY, LL.B., E. G. ROUTZAHN, C.-E. A. WINSLOW, DR.P.H.

OYSTERS AND TYPHOID FEVER

IT WILL give much satisfaction to health officers to know that the vast areas now devoted to oyster culture are free from suspicion of danger, and that the recent outbreak of typhoid fever has been traced to one packing plant on Long Island.

On February 19, 1925, an important conference was held at the office of the Bureau of the Public Health Service, in Washington, at which there were representatives from the Bureau of Chemistry, Bureau of Fisheries, State and Municipal Health Authorities, State Conservation Commissions, and representatives of the Shell Fish Industry, the object being to inaugurate measures which would insure for the future the safety of the industry. According to Mr. O'Malley, Commissioner of the Bureau of Fisheries, oyster fishing is carried out in some nineteen states of the Union. The annual output is approximately 73,000 tons as prepared for consumption. There are 67,000 persons employed and the annual value to the fishermen is $14,000,000, an average of less than $210 per person engaged. The typhoid fever scare killed the industry to the extent of 80 per cent in some places and 65 per cent in other places. There seems to be no question that those engaged in oyster fishing, whether as fishermen or shuckers, have been on the verge of starvation through the destruction of the business from which they obtain their meager living. However, the health of the public is paramount, and if oysters are spreading typhoid fever it must be stopped even if the industry suffers. The value of the food product, not only to those engaged in the business, but to the consuming public, makes it necessary to eradicate what dangers there may be, so that these supplies will be available to the public and safe. Some years ago, this matter was taken up by the American Public Health Association and after many experiments a standard method for the examination of oysters was adopted by the Association.

The various states have in the past exercised supervision over their oyster beds. We can give some idea of what this amounts to when we say that the state of Virginia oversees 3,000 square miles of water and 340,000 acres of oyster beds. The federal government cannot interfere with oysters until they are put into interstate traffic.

Health officers in general will be pleased to know that as a result of the meeting in February a committee has been appointed, made up of officers of the Public Health Service, state health officers, sanitary engineers, chemists and

representatives of the oyster business, to carry out the provisions of the resolutions adopted at this conference. These resolutions provide for a more adequate official sanitary supervision, and a set of rules, given in the April JOURNAL,* was adopted as a basis for permanent control of oysters. The methods for laboratory control were referred to the Committee on Standard Methods of the American Public Health Association.

Certain states, New York for example, have already introduced laws for the further protection and regulation of the oyster business and a resolution was passed at the Washington Conference urging the legislatures of the various oyster-growing states to pass laws in conformity with the resolutions adopted.

One of the practices of the past which is known to be dangerous is the "drinking" or "floating" or "fattening" of oysters. The oysters grow in salt water. After being removed from the beds, it has been the custom to put them in brackish water, often near to cities, where pollution with sewage may exist. The oysters take up the water, become whiter in color, plumper and perhaps more attractive looking, but if the water is polluted, they take in the germs which may be present in sewage. The new laws, as far as they have been proposed, prohibit this practice.

The outcome of this conference in Washington must be distinctly reassuring to the public. The Public Health Service has already done many things for the benefit of the consumer and of the oyster business, and we can confidently expect that in the near future its powers will be enlarged and that the people generally will reap the benefit of its increased supervision over this important food.

* Page 384.

PNEUMONIA *

IN 1915 a Pneumonia Commission was appointed by the Director of the Department of Public Health and Charities of Philadelphia. Its first report was published in 1922 and contained valuable material, much of which concerned the treatment of the disease. A supplementary report has just been published bringing the knowledge of this disease up to date. We will not take up what has been said about treatment, but from the public health standpoint some interesting facts are brought out, which, although not new, will bear repetition, for pneumonia is a disease which is always with us and liable to occur in epidemic form not unfrequently.

It is well known, of course, that many people carry the pneumococcus in their mouths. Since many cases of pneumonia are preceded by a slight cold, the conclusion is drawn that the catarrhal condition increases susceptibility. Like all other diseases, the mortality varies in different epidemics, but there seems to be a gradual and progressive decline in the death rate, though there is difficulty in obtaining satisfactory statistics since cases of pneumonia are not reported unless they terminate fatally. The total mortality is known but not the total morbidity nor the relation which one bears to the other. In New York City where the reporting of diseases is carried out as well as anywhere, it is estimated that not more than 30 per cent of the cases of pneumonia are reported. The Commission is of the opinion that it should be made a reportable disease, and looks forward to the

* Department of Public Health, Philadelphia, 1925.

time when quarantine will be instituted in our large cities. The experiments in this direction now going on in Pittsburg are being watched everywhere. It is recommended that the physician should institute his own quarantine of his cases. In all cases the sputum should be disinfected promptly. The use of vaccines has not proved entirely satisfactory. The results do not compare in efficiency with those obtained in diphtheria or typhoid fever. During epidemics the use of a mixed vaccine is regarded as useful.

In the treatment of the disease it must always be remembered that failure of the heart muscle is the most frequent cause of death. This organ must, therefore, be carefully guarded during the attack.

Everyone awaits with interest the result of the experiments now being carried out by Felton of Harvard. Previous methods of specific treatment have not been satisfactory. There is no doubt that a serum which is both antitoxic and antibacterial can be obtained against Type I pneumococcus, but further than this, the results have not been strikingly successful.

THE CURE OF LEPROSY [1]

A RECENT press notice issued by the United States Public Health Service calls attention to the release of four lepers from the Marine Hospital No. 66, at Carville, Louisiana. We have become somewhat accustomed to thinking of the cure of this terrible disease, but even so, the fact that men once lepers have been released from treatment and declared to be no longer a menace to public health must attract attention. Before release these cases are kept under special observation for a period of one year, during which time bacteriological examinations are made once each month, and the leprosy bacillus must not be found at these examinations. A board of three medical officers who are experienced in leprosy must give a certificate of cure.

The treatment includes the use of chaulmoogra oil, special preparations of mercury used intravenously, X-ray therapy, surgery of superficial areas of involvement, hydro-therapy, and the violet ray. The results obtained have been so encouraging that a number of other patients have agreed to treatment at the National Home for Lepers. In order to transfer them from one part of the country to another, a special car has been fitted for the purpose. A doctor and a nurse travel with the lepers. In this way eleven have been brought from Florida and seven from California. At present 236 lepers are patients at Carville and there is reason to believe that there are several hundred more in the United States who may eventually be brought for treatment.

When we remember that from time immemorial, leprosy has been considered an incurable disease and that lepers have been social outcasts in every country, the announcement of the cure of this dreadful disease must be regarded as a triumph of modern science. We trust that the hysteria in most parts of our country which has so long attended the finding of a leper will soon be a thing of the past. The disease is at best slowly contagious and now that positive cure can be brought about, there is no reason for the dread which always attends a disease known to be incurable, the inevitable outcome of which is death.

[1] *Health News*, March, 1925.

ANTHRAX FROM SHAVING BRUSHES

THE DANGER from shaving brushes infected with anthrax spores has once more been painfully called to our attention by the sad death of Professor Ellermann of the University of Copenhagen. On December 17, 1924, a small spot appeared on his left cheek. It was soon followed by considerable edema, but without marked general symptoms. An examination of his shaving brush showed that it was dyed Chinese horsehair, made to imitate badger, and from the hair anthrax was isolated. The diagnosis was clear, and in spite of the injection of anthrax serum, Professor Ellermann died on December 24.

The experience of the American army is still fresh in the mind of everyone. During the war shaving brushes supplied by the Quartermaster's Department of the army were found to be infected with anthrax spores. So many cases occurred both in the army and in civilian life that certain cities and states forbade the sale or handling of horsehair shaving brushes, especially those made in Japan. In the army there were 149 cases with 22 deaths, all of which were believed to be due to shaving brushes.

In England the first case of anthrax traced to a shaving brush occurred in 1915. From 1915 to 1921 in the civilian population 50 cases occurred with 18 deaths. Among the British troops in France between January, 1915, and February, 1917, 28 cases occurred, and in the navy six cases somewhat later than this. It was not possible to demonstrate that the infection in all of these cases came from shaving brushes, but since the majority of them were on some part of the face and neck, the indications were that shaving brushes could be fairly incriminated. So strong were the indications that the government prohibited the importation of shaving brushes manufactured in Japan. A large number of suspected shaving brushes were destroyed, and the infection was brought to an end.

This new case, with the history of those which have already been published, indicates a source of danger against which we should constantly be on our guard.

WILLIAM HENRY WELCH

THIS JOURNAL, representing the membership of the American Public Health Association, extends to Dr. Welch its most hearty congratulations on his 75th birthday, April 8, 1925, and wishes for him a long period of health and happiness for the future!

Dr. Welch has long been recognized as the Father of Pathology in the United States, and was one of the first to take up bacteriology in this country. As early as 1878, he was demonstrating the fundamentals of bacteriology at the Bellevue Hospital Medical College, in New York, in which institution he held the chair of Pathology from 1879-1884, when he moved to Johns Hopkins University, where he was professor of Pathology until 1916, in which year he became Director of the School of Public Health at the same institution. From 1893 to 1898 he was Dean of the Medical Faculty at Johns Hopkins. Bacteriology has always been an important branch under Dr. Welch's guidance, and it is not strange to see that he early developed a great interest in public health, which has constantly grown and which had its culmination in the foundation of the school of which he is now director.

He was one of the first to see the importance of the anti-tuberculosis movement in the United States, was active in the formation of the National Tuberculosis Association, of which he is a past president. Dr. Welch has been connected with the Rockefeller Institute of New York and the International Health Board since their foundation, and it is hardly too much to say that his influence has been a determining factor in the donations of Mr. Rockefeller to the advancement of public health and medical education.

Dr. Welch has had the great experience of living through that period of the world's his-

tory in which many of the greatest discoveries in the natural sciences have been made—born as he was just before Pasteur began to publish the story of his remarkable discoveries. He has seen the birth of the so-called germ theory of disease, its rise and its confirmation, as well as the isolation of all of the pathogenic organisms now known.

Even a partial list of the positions held by Dr. Welch and the honors paid to him in practically every part of the world, would require more space than we have to give. As Americans, we rejoice with him in those honors. However, they have been given to him largely in recognition of his scientific attainments. They do not tell anything of the man himself. Always a teacher, always approachable, genial, interested, and free to give credit to the most unknown beginner, he has done more to stimulate work and to encourage young men than any other teacher in America. One marvels how he has found time to take part in the multitude of public activities which have marked his career, but none the less we wonder what this country would have done without his guidance and assistance in such affairs.

This JOURNAL is authorized to speak only for the membership of the American Public Health Association, but we do not feel that we are assuming too much when we say that the medical profession of the entire United States, and scientific men generally, will join us in wishing for him every good thing for the future.

M. P. RAVENEL.

DR. GRACE MEIGS CROWDER

ON JANUARY 20, 1925, in Chicago, there passed away a physician and former public health official whose contribution to the welfare of women and children is so significant and so valuable that it merits a public tribute to her memory.

Dr. Grace Meigs was born in Rock Island, Illinois, on August 30, 1881. She was graduated from Bryn Mawr College with the degree of A.B., in 1903, and received her degree of M.D. from Rush Medical College of the University of Chicago in 1908, standing first in her class. Later she carried on post-graduate study in Germany and Austria; was an interne of the Cook County (Illinois) Hospital; attending physician to the same hospital; Fellow with the Otho S. A. Sprague Memorial Institute at the Children's Memorial Hospital and a member of the faculty of Rush Medical College in the Department of Pediatrics.

With this background of special preparation for her chosen field of work, Dr. Meigs became associated with the Children's Bureau of the United States Department of Labor on October 21, 1914, and served as the director of the Bureau's Division of Hygiene until July 15, 1918. During this time she was in immediate charge of the bureau's activities relating to the health of women and children. The results of her work during this time bear vivid testimony to her sound scientific standards combined with her sympathetic realization of the human side of the problems that it was her desire to meet and to solve. Her opportunity for service was equalled by her ability to render it in full measure. Not only does the entire field of public health bear witness to her pioneer work in establishing a basis for our efforts to reduce the maternal mortality rate, but thousands of women are now living who owe their lives to Dr. Meigs' epoch-marking studies of the causes of maternal mortality and the determination of the basic methods that we are now following in our program for lessening the dangers of motherhood.

In 1917, Dr. Meigs published her study: "Maternal Mortality from all Conditions Connected with Child Birth, in the United States and Certain Other Countries." No such comprehensive study of this subject had previously been published. It served in large measure to stimulate the beginning of organized public health work for the reduction of the maternal morbidity and mortality rates in this and other countries. Her interests covered the entire field of maternal and infant hygiene with particular reference to rural obstetrics and the problem of the baby born and living in a rural community. It is safe to say that there are few other persons who have made so vital and so significant a contribution to public health work for women and children.

In September, 1918, Dr. Meigs was married to Dr. Thomas Reid Crowder of Chicago. She is survived by her husband and three children; Alice, Juliet and Thomas R., Jr. A devoted wife and mother, a gifted woman, a wise physician and a brilliant public health official has left us; we grieve for her loss but the inspiration of her life and work will remain with us.

S. JOSEPHINE BAKER.

LETTERS TO THE EDITOR

TO THE EDITOR:

In your issue of February, 1925, appears the article of Ernest W. J. Hague, Chief Health Inspector, Winnipeg, Manitoba, on "Modern Tendencies in Public Health Work."

Amidst many true statements and shrewd deductions from observation, there is recorded one important fallacy which is so often encountered from so many different sources that its correction becomes a matter of simple duty. This fallacy is stated in the article as follows: "After all, the great majority of people die from other causes than the communicable diseases." This is then followed by short tables purporting to show that the deaths from ten or eleven quoted communicable diseases aggregate only about 25 per cent of the total deaths. The fallacy consists in considering these ten or eleven diseases as covering the communicable disease list.

If any one wishes to determine for himself the real situation, let him secure a copy of the Mortality Statistics of the Census Bureau for any recent year. Let him go over the deaths as classified by causes, noting separately the numbers of those that are, and of those that are not, obviously due to infection. The resulting figures will give him approximately 61 per cent of all deaths as due to infection; and for the deaths between the ages of one year and thirty-nine years, approximately 75 per cent as due to infection.

If, now, he will omit deaths from old age, accident, poisoning, congenital malformation, and such like, not usually or ordinarily included when we speak of disease, he will find that of all dying from definitely assignable diseases (as distinct from old age, accident, etc.), no less than 86 per cent are due to infection.

Infection is our one method of communicating disease from person to person. Everyone who dies of an infection, dies of something communicated to him from another person (or other animal) directly or indirectly. Without such communication of infection, most of our diseases would cease, become nonexistent as precisely, totally, and inevitably as bullet-wounds would disappear the moment bullets were no longer fired from firearms.

I prepared the figures I quote above from the 1917 U. S. Mortality Statistics. The very simple method I used was adopted and applied by actuaries of the London Life Insurance Co. of Canada to the 1920 U. S. Mortality Statistics, and yielded returns varying from my own as applied to the earlier year, by less than one-tenth of one per cent.

But even these figures are short of the real truth. They all are necessarily based on the returns made by physicians. The whole facts without doubt would yield a higher percentage of deaths due to infection than those I quote.

To instance only one reason for believing this—Mr. Hague quotes deaths from syphilis as 1.4 per cent of the total, *i.e.*, scarcely one-sixth of those from tuberculosis. Yet a long line of our authorities designate syphilis as the greatest killer of our race. The 1.4 per cent recorded as dying of syphilis represent doubtless less than one-tenth of the deaths actually and directly due to this cause; the difference representing the hesitancy of the medical profession (upon whose death certificates all these statistical records ultimately depend) to record syphilis as a cause of death where it can possibly be avoided.

Tuberculosis, pneumonia, heart diseases and syphilis—these four alone—account for about 40 per cent of deaths. Diabetes (on the authority of Banting), is due to infection in half the cases at least; while accidents of various kinds often terminate fatally because of superadded infection. There is every reason to believe that at least three-quarters of all deaths, and 90 per cent of deaths from disease, are due to communicable causes.

Very sincerely yours,

H. W. HILL

Director, Institute of Public Health,
University of Western Ontario,
London, Canada.

February 16, 1925.

TO THE EDITOR:

I have read with interest the letter of Dr. H. W. Hill, and must frankly state that as a layman, I cannot pretend to discuss the subject with anything like the authority of an eminent sanitarian like Dr. Hill. Any com-

ments I make, therefore, are submitted with deference.

It cannot be denied that the cause of death as given in many death certificates, is not the only cause, and that the real cause may have been some infection, acquired perhaps many years previously. Sometimes these infections are discovered during life as in tuberculosis and syphilis, but others are so obscure that physicians are not able to state definitely, whether or not the sickness is due to an infection, or if so to say when and how the infection took place.

The statistics I used dealt only with the more common and recognizable communicable diseases—those which health departments try to control. There are many other communicable diseases besides the eleven mentioned, but these are not prevalent in North America. Dr. Hill gives to the words "communicable disease" a much wider application than the generally accepted definition. He states that "Tuberculosis, heart diseases, pneumonia, and syphilis account for about 40 per cent of deaths. I instanced:

Tuberculosis (all forms).....	8.2%
Syphilis	1.4%
Influenza and Pneumonia.....	11.3%
	20.9%

If we add heart diseases (14 per cent), we get a total of 34.9 per cent. I did not include heart diseases because they are not commonly considered as communicable diseases, although, no doubt due in many cases, to some infection. Nor would most persons consider wound infections as coming within the list. There will be many not prepared as yet, to accept the theory that infections are such an almost universal cause of death as Dr. Hill believes them to be. It has been said that everybody has been affected with tuberculosis at one time or another, and also that the whole human race is tainted with syphilis, but such statements are not necessarily true. There is little doubt, however, that Dr. Hill is right in stating that the small percentage of deaths recorded as from syphilis is extremely misleading.

My paper advocated concentration of efforts where reliable methods of concentration are known (just now diphtheria and scarlet fever are those distinctly indicated), but pointed out that up to the present, the greatest results in public health work have been achieved by improving the environment of man, and by supervising the public routes of infection. It pleaded for a wider sphere of usefulness for health departments, as distinguished from the tendency shown in some quarters to restrict the work, and urged that whilst not neglecting to concentrate on the more common communicable diseases, especially those in which an immunity can be conferred, we should also adopt all necessary measures to improve the environment of man, his food, clothing, habits, homes, and work places, not only in infancy and childhood, but throughout life.

Work on these lines with its attendant publicity will go far to educate mankind in hygienic modes of life, awaken a keener interest in health as being our most valuable asset, and make universal the practice of periodical medical examinations. Such a course, persistently pursued, would surely lessen the risks of the manifold infections which apparently surround us on every hand, and make it possible to prevent, or at least postpone the consequences.

Finally, the principal object of the address was to point out to health officers the importance of encouraging the efforts now being made to improve the efficiency of inspectors by means of education, and the setting of a higher standard of proficiency. If this were done, and if every sanitary inspector in the United States and Canada were to become a member of our Association, and to read this JOURNAL regularly, health officers would reap their reward in an increased efficiency and devotion to duty on the part of their staffs, thus making possible the achievement of more rapid progress in public health work.

Yours truly,

ERNEST W. J. HAGUE.

Winnipeg, Manitoba,
February 27, 1925.

ASSOCIATION NEWS

ANNUAL MEETING HEADQUARTERS

The Hotel Statler has been designated as the headquarters for the Fifty-Fourth Annual Meeting of the Association in St. Louis, October 19 to 22. Three hundred rooms will be available at the hotel for those attending the meeting. Many of them are double rooms and a larger number of delegates can be accommodated at the headquarters hotel if rooms are reserved for double occupancy.

Before the Annual Meeting begins the new Hotel Mayfair across the street from the Statler is expected to be completed. The choice of hotels, however, is wide and a complete list of hotels, rates and locations will appear in the July JOURNAL.

All meetings will be held at the Hotel Statler.

ELIGIBILITY COMMITTEE MEETS

The Committee on Eligibility, authorized by the Constitution to examine and pass on applications for Fellowship, met in New York on March 23, 1925. Twenty applications were presented which had passed the Section Councils; of these 17 were recommended to the Governing Council for favorable action.

The Committee also considered the application for affiliation from the Pennsylvania Public Health Association and will report its approval of the application to the Governing Council.

THE FORUM

Plans are being developed for the Forum Session at the Annual Meeting in St. Louis. This Session offers an opportunity to members of the Association to secure discussion of difficult problems which confront them. All classes of sanitarians are represented in the Association and authorities on every phase of public health work will be present at the St. Louis meeting to advise and discuss with any member professional questions that trouble him. The Forum Session provides what every delegate to every convention looks for and seldom finds—an opportunity to have his particular interests considered. There are no formal papers in the Forum Session. The whole time will be devoted to questions submitted either from the floor or in advance of the meeting. Those submitted in advance will be considered first and all members of the Association are invited to submit their questions to the Secretary of the Forum Committee, Charles F. Wilinsky, M.D., Blossom Street Health Unit, Health Department, Boston, Massachusetts.

APPRAISAL FORM PRINTED

The appraisal form for city health work, which has had a limited distribution of mimeographed copies, has been printed to supply increasing demands. This form, developed by Dr. Rankin as Field Director of the Committee on Municipal Health Department Practice in coöperation with and the help of other interested groups, has found a wide field of usefulness among health officers in particular, and sanitarians in general. It has been published for experimental use and when experience has proved its valuable points and discovered its weak ones, it will be revised with the assistance of those who have used it. Copies of the form may be secured from the Secretary of the Association. Single copies are supplied free to members and at cost in quantity to organizations.

THE SECRETARY TRAVELING TO THE WEST

The Secretary of the Association will leave New York the first of May for an extended trip to the west. His itinerary will include St. Louis, Austin, Houston, Albuquerque, Los Angeles, San Francisco, Portland, Salt Lake City, Denver, Springfield, Ill., and Harrisburg, Pa. This gives the members of the Association an opportunity to meet the Secretary of the Association on their own ground and tell him what they think of the way the affairs of their society are conducted. The Secretary hopes he will be spared neither criticism of past performances nor suggestions for future progress.

REVIEW OF ANNUAL REPORTS

Beginning with this issue of the JOURNAL the section devoted to the review of annual reports of health departments will be conducted by Professor Ira V. Hiscock of Yale University. This section first appeared in the JOURNAL in May, 1912, and except for a lapse from October, 1912, to May, 1913, it was a regular feature until January, 1918. It was again established in February, 1925.

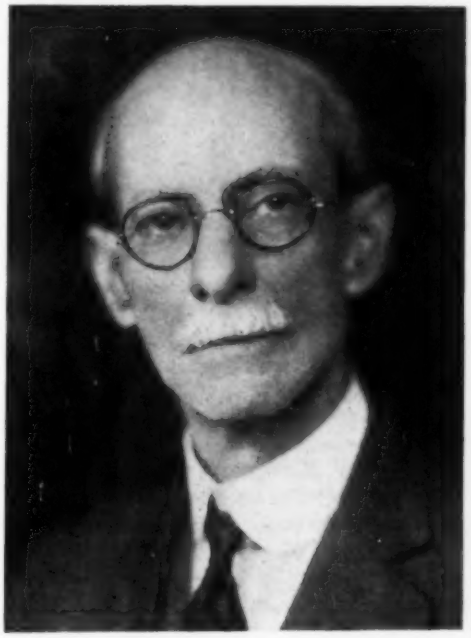
Comments in this section will be made not merely on the vital statistics of cities but on the progress of public health organization, the presentation of the material and other interesting features of unusually good reports.

JOHN NEWELL HURTY, M.D., 1852-1925

John Newell Hurty, M.D., was born February 21, 1852, at Lebanon, Ohio. He died March 27, 1925, in Indianapolis, Ind. He completed a technical course in the Philadelphia College of Pharmacy and Chemistry with a course of lectures at Jefferson Medical College, Philadelphia, in 1872. He was graduated from Purdue University, Lafayette, in 1879, and from the Medical College of Indiana in 1881. Immediately following his graduation from Purdue, he established himself in the profession of analytical chemistry in Indianapolis, being at that time one of the few analytical chemists in the United States. In 1891 he became chemist for the city health department of the city of Indianapolis, and in 1893 was made health officer of that city. In 1896 he was appointed secretary of the Indiana State Board of Health, serving as secretary of the board, and State Health Commissioner of Indiana until October 1, 1922, a period of twenty-six years and six months.

During the time Dr. Hurty was State Health Commissioner of Indiana he wrote, and was instrumental in having the legislature enact, practically all the health laws of the state, and was known as an outstanding leader in the development of administrative public health work throughout the United States.

He was a member of the National Commission of Milk Standards; member of the American Medical Association; member of the American Pharmaceutical Association; and held membership in practically every national and state medical and public health organization. For a number of years he was president of the Indiana Dental College and was a lecturer in this institution for thirty years. He was also professor of hygiene in the Indiana University School of Medicine, and lectured on hygiene and sanitary science in this institution for a number of years. He



JOHN NEWELL HURTY, M.D.

was at one time president of the Conference of State and Provincial Health Authorities of North America.

Dr. Hurty became a member of the American Public Health Association in 1896; served as a member of the Board of Directors for a number of years and was elected president of the Association in 1912. He was an active participant in Annual Meetings and many will remember his descriptions of his pioneer work in Indiana, particularly in Venereal Disease Control. He attended the Cleveland Meeting and was elected a Charter Fellow. He was elected to Honorary Fellowship in 1924.

In 1877 Dr. Hurty married Miss Ethel Johnson of Indianapolis. He is survived by the widow, and two children, Gilbert J. Hurty and Mrs. Almus Vinton, both of Indianapolis.

INTERNATIONAL CONGRESS OF INDUSTRIAL HYGIENE

The Fourth International Congress of Industrial Accidents and Diseases will be held in Amsterdam, Holland, September 7 to 12, 1925. Special provision has been made for American representation at the full sessions and on the subject of professional diseases for Friday, September 11, also for psychotechnique at the section meeting on Thursday, September 10, while of course all the sessions are open to members or delegates from all countries.

The Secretary of the Section on Industrial Hygiene (A.P.H.A.) would like to receive notice from all members of the Association who may be able to attend this Congress with a view to appointing delegates to represent this Section. Address, Emery R. Hayhurst, Ohio State University, Columbus, Ohio.

A British Executive Committee for the Congress, headed by Sir Thomas Oliver as President, and Dr. H. Menko as Honorary Secretary, will include all English speaking people. This party will leave London on Sunday morning, September 6, 1925, for Amsterdam. Dr. H. Menko's address is 2 Grosvenor Gardens, Cricklewood, London, N.W. 2. The British Committee would like to be advised of all who are expecting to attend and especially of all who may desire to present papers.

LIST OF MEMBERS

Proposed for election to the A.P.H.A., March 1 to March 31, inclusive.

Atlantic Life Insurance Company, Richmond, Va. (Sust.)

Dr. J. Barros Barreto, Rio de Janeiro, Brazil, S. A., Federal Department of Public Health, Rio de Janiero. (Assoc.)

Dr. Arthur W. Bingham, New York, N. Y., President, Medical Board of Willard Parker Hospital, Visiting Physician Willard Parker Hospital, New York, N. Y.

Dr. J. M. Blackwell, Cushing, Texas. (Assoc.)

Isaac Cohen, B.S., Lisle, N. Y., engaged in doing dairy laboratory work and assisting in cheese-making. (Assoc.)

Mabel M. Boorum, R.N., Bloomfield, N. J., Associate Editor, Hospital Social Service Magazine, New York, N. Y.

Colonial Life Insurance Company, Jersey City, N. J. (Sust.)

Lester McDonnell Coulter, M.D., New York, N. Y., organization, editorial and publicity work in interests of public health.

Louis Du Bois, Stelton, N. J., First Lt. Sanitary Corps, U. S. Army (Reserve). (Assoc.)

Alice A. Eck, R.N., Grafton, W. Va., County Health Nurse, Taylor County.

Equitable Life Insurance Company, Washington, D. C. (Sust.)

Nelson M. Fuller, Montclair, N. J., Assistant Health Officer.

Edwin J. Goodwin, M.D., St. Louis, Mo., Editor, Journal Missouri State Medical Association, and Editor, St. Louis Board of Health Bulletin.

Leander J. Graves, M.D., Russellville, Ala., County Health Officer, Field Agent, U.S.P.H.S.

Medra Hall, B.S., Bozeman, Montana, Teacher of Home Economics, Junior High School, Bozeman. (Assoc.)

Marion G. Howell, R.N., M.Sc., Cleveland, Ohio, Director of Course in Public Health Nursing at Western Reserve University.

A. W. Jones, St. Louis, Mo., Secretary, Tuberculosis Society of St. Louis, Mo.

John C. Kamp, M.D., Saugerties, N. Y., Health Officer for the Consolidated District of Saugerties, N. Y.

Homer V. Knouse, Omaha, Nebraska, Superintendent, Water Dept., Metropolitan Utilities District, including water purification.

Allen Kramer Krause, A.B., A.M., M.D., Baltimore, Md., researches in infection and immunity of tuberculosis; Editor, American Review of Tuberculosis; Lecturer and writer on prevention, etc., of tuberculosis.

Daniel C. Lochead, Rochester, Minn., Deputy to Dr. C. H. Mayo, Health Officer, Rochester, Minn.

Thomas B. S. Matthews, Montgomery, Ala., Sanitary Inspector.

Frank J. McGarry, Saranac Lake, N. Y., Sanitary Inspector and Registrar of Vital Statistics.

Gustavo de Sa Lessa, M.D., Rio de Janeiro, Brazil, S. A., Medical Inspector in National Department of Health of Brazil. (Assoc.)

Walter H. Miles, M.D., B.S., Oklahoma City, Okla., Director of Health.

Emma McEwen Miller, R.N., Los Angeles, Calif., Laboratory Technician.

Halstead G. Murray, Framingham, Mass., Industrial Physician, Dennison Manufacturing Company, Framingham, Mass.

Frank L. Roberts, B.A., M.A., M.B., M.D., Trenton, Tenn., Director, County Health Department, Gibson County, Tenn.

Anna L. Stanley, R.N., Harrisburg, Pa., Supervisor of School Nursing.

Harold W. Stevens, M.D., Boston, Mass., Director Health Department, Jordan Marsh Co., Boston, Mass.

LeRoy V. Strasburger, Baltimore, Md., Commercial Food Chemist and Bacteriologist.

V. T. Webb, M.D., Little Rock, Ark., Director of Public Health, Pulaski County.

APPLICANTS FOR FELLOWSHIP

The names of the following candidates for Fellowship in the American Public Health Association have been approved by the respective Section Councils and by the Committee on Eligibility. They are now published in accordance with the provisions of the Constitution. The Governing Council will take final action at the St. Louis Annual Meeting.

PUBLIC HEALTH ADMINISTRATION SECTION: John J. Mullowney, M.D., Nashville, Tenn.; Raymond Voorhees Brokaw, M.D., Springfield, Ill.; Herbert Luther Lombard, M.D., Presque Isle, Me.; Charles Samuel Woods, M.D., Cleveland, Ohio.

LABORATORY SECTION: William Henry Marcussen, New York City; Anna W. Williams, M.D., New York City; Ruth Gilbert, M.D., Albany, N. Y.

SANITARY ENGINEERING SECTION: George H. Ferguson, Toronto, Canada.

VITAL STATISTICS SECTION: Robert M. Woodbury, Ph.D., Washington, D. C.; William Thurber Fales, Montgomery, Ala.

FOOD AND DRUGS SECTION: George W. Grim, V.M.D., Ardmore, Pa.

INDUSTRIAL HYGIENE SECTION: George Hastings Wood, M.D., Detroit, Mich.; Wade Wright, M.D., New York City; Edward P. Case, M.D., Hartford, Conn.; Carey P. McCord, M.D., Cincinnati, Ohio.

CHILD HYGIENE SECTION: Bernard William Carey, M.D., Athens, Ga.

UNAFFILIATED: John A. Amyot, M.D., Ottawa, Ont., Canada; Victor C. Vaughan, M.D., Detroit, Mich.

STATE PUBLIC HEALTH SOCIETY: Pennsylvania Public Health Association, Harrisburg, Pa.

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 8th of each month. Mail to New York office as early as possible.

In answering keyed advertisements, please mail replies separately to office in New York City. In replying give age, professional training, salary requirement, previous positions held and three or more references.

Wanted: Statistician familiar with vital and medical statistics, and who has had several years' experience. Salary $2,500–$2,700 per annum. State age, experience and general qualifications. Address, 598E, care of this JOURNAL, New York address.

Wanted: Experienced Laboratory Technician, male or female; must have a complete understanding of the Kohlmer Wassermann and blood chemistry. One intending to make this his or her life work, and willing to make home in Oregon. Chance for future partnership in private laboratory. State age, experience, degree or education, minimum salary acceptable and religion. Address 597 G. R., care this JOURNAL, New York address.

Wanted: County health officer for well organized department. Southern state. Must have public health experience or training. Address 596 R. L., care this JOURNAL, New York address.

Wanted: Physician required by a middle western state health department for field services in connection with the control and prevention of communicable diseases; opportunity for epidemiological study, and for advancement; salary $3,000 yearly and traveling expenses. Address 599 R. G., care this JOURNAL, New York address.

Wanted: Full-time health commissioner in city of 60,000 in middle west. Must be graduate from Class A medical school and have had special training in public health as well as experience in health department work. Salary, $4,800 per year. Address 600 R.C., care this JOURNAL, New York address.

GOOD PERMANENT POSITION
Open to Right Man
Must be graduate of medicine—not over 40 years of age and willing to travel. Must be familiar with biologicals and have good knowledge of biological therapy. Give full details concerning experience, references, and state salary expected. Address Professional Service Department
E. R. SQUIBB & SONS
NEW YORK

POSITION WANTED

Positions wanted announcements of 50 words or less will be carried for individuals at a charge of $2.00 per insertion. Copy should be received at the New York office by the 8th of the month preceding publication.

Wanted: Opportunity wanted by pathologist, theoretically and practically trained in tissue diagnosis, serology, hematology, blood chemistry and bacteriology. Was director of base hospital laboratory; ten years' experience; willing to qualify by examinations if required. Prefer outside teaching connection. Also owns complete laboratory equipment. Available fall 1925, any location, single, Protestant. Address 336 W. S., care this JOURNAL, New York address.

Wanted: Laboratory position by young woman, college graduate with four years' experience in chemical and bacteriological laboratories. Milk or water laboratory preferred. Address 350 B. E., care this JOURNAL, New York address.

Assistant Bacteriologist: Position desired in middle west. Eight years' experience in laboratory routine methods and general public health work. Formerly held position with Maryland State Department of Health. Can furnish certificates and references. Address 351 B. J., care this JOURNAL, New York address.

Wanted: Position as biochemist or bacteriologist in public health work. Have B.S. and M.S. degrees and am candidate for Ph.D. degree. Three years' experience in research work in bacteriology and biochemistry. Available June 15. Address 352 G.J., care this JOURNAL, New York address.

BOOKS AND REPORTS

Impressions of Great Naturalists—*By Henry Fairfield Osborn. (Illustrated.) New York: Charles Scribner's Sons.* Pp. 216. Price, $2.50.

This is a beautifully prepared volume of sketches of a dozen great naturalists by Professor Osborn, whose impressions are largely from personal contacts with these great men. Wallace, Darwin, Huxley, Balfour, Pasteur, Leidy, Cope, Muir, Roosevelt, Bryce and Butler are here presented, first through excellent portraits, and then through literary gems touching their accomplishments. Health officers should be interested in these sketches of men of mark in natural history, but their attention may well be centered in the dozen pages devoted to Pasteur, who is rated by Osborn as "supreme as a benefactor of mankind." "He played the original and creative part in the movement for the prevention and relief of human suffering." In nature he found the cause and in nature he sought for the relief.

He who seeks the recital of the details of individual discoveries will be disappointed, for the sketches sum up in masterly fashion the character of the men, almost entirely through classical and literary lines of thought, for Professor Osborn's sketches add to literary treasures rather than to scientific. The sketch is headed, "The New Order of Priesthood," and refers to the work of Pasteur as "more than humanitarian, more than scientific; it was religious. . . . Pasteur showed the way to the physical redemption of man, as Newton has opened for us the new heavens, and Darwin, the new earth."

JOHN RITCHIE.

Arrowsmith—*By Sinclair Lewis. New York: Harcourt Brace.* 1925. Pp. 448. Price $2.00.

To read Arrowsmith with the greatest enjoyment and profit, the sanitarian must lose himself in it, as the romance of the laboratory, with antibodies, antitoxins and phages as the real heroes of the world. He must accept immunology as a type of pure science and forget that there is romance or science in the newer knowledge of nutrition or in a pioneer problem in sanitary engineering. He must forget for a moment the absorbing interest of completing the circle of freedom from defects, of vigorous, happy development through rest, sensible feeding, outdoor play and educational training, as well as immunization and environmental control. The doctor must waive the privilege of retorting that the finer things in group diagnosis, in surgery and orthopedics, in the prevention of goitre, pellagra and rickets are ignored as scientific contributions. Both practicing physician and public health worker should ease their minds of any inconvenient pride of profession and with generous humor enjoy the sharp thrusts at the foibles of their fellow professionals. If their good nature is expansive enough they may even learn a lesson or two themselves.

The love story of Martin Arrowsmith and Leora is by all means the most artistic thing of the kind that Mr. Lewis has done and adds greatly to the realism of the tale.

The professors of the Medical School at Winnemac, who pass in array, furnish most of the targets for Mr. Lewis' humorous satire, so far as the medical profession is concerned. The professor of anatomy, Dr. Stout, "was himself an anatomy, a dissection chart . . . he could repeat more facts about the left little toe than you would have thought anybody would care to learn." Roscoe Geake, Professor of Otolaryngology, "would have done well with oil stock . . . he believed that tonsils had been placed in the human organism for the purpose of providing specialists with closed motors." Mr. Lewis strikes hardest in his sketch of Angus Duer, the medical student and later practitioner. He is cold and calculating, with a supercilious contempt for all who have not demonstrated their power to make money and a scarcely veiled hatred for any who do not recognize his superiority.

Pickerbaugh, the Chromo-Rooseveltian, back-slapping health officer, with reversible ideals, is cruelly overloaded as a type. He carries all the sins of the timid health officer who is afraid when the political boss speaks and of the political stump speaker and joiner of every whoop'er-up society. At the same time he

embodies the evil characteristics of that arch-enemy of the health officer—the health propagandist who can manufacture statistics for any purpose out of thin air. While unconvincing as a human being, either with his poetry or his personality, he serves as a useful and a smile-provoking foil to the eager narrowness of his assistant health officer, Martin Arrowsmith, in the latter's search for unadulterated facts. But the funny-faced straw men, such as Pickerbaugh and Professor Geake, do not frighten you away from the fields of fake medicine and of sleight-of-hand public health. It is Gottlieb, that heroic old crab, who grips you and draws you away into the paths leading up to the mountain top of science.

From the time that Martin Arrowsmith had, at fourteen, forced himself as an unpaid "assistant" upon the drunken village practitioner, until, approaching forty, he brushed aside the final temptations of the call of his rich society wife (his second) and retired with his sardonic and likable chum in research, to a rude country laboratory where he could be free for pure science, he was decidedly temperamental. It was Gottlieb, the thorough German precisionist in laboratory technique, dramatic in the loneliness of his quest for the irreducible minimum of truth, who directly or indirectly brought him back from chasing will o' the wisps of medicine and public health or the more easily resisted lures of success, to the straight, narrow, rocky path of research. He fascinated Martin with his skill and learning, scolded him into rigid exactitude and adequate preparation, and encouraged him with rare and grudging praise.

The story of Gottlieb is told with simplicity and power. It is so constructive and appealing, for his science of immunology, that the layman will be tempted to throw away every contribution to medicine or public health outside of that field.

You are thrilled as you follow Gottlieb's dramatic career. Finally you see him jerked clear out of his scientific sanctuary to be director of the lavishly equipped McGurk Institute. To Martin, who protests, he says: "Of course, nothing must interfere with my immunology, but dis gives me the chance to do big t'ings and make a free scientific institute for all you boys." Then you suffer with him when, as a silver haired old man, he is slowly broken by the intrigues of his fellow workers, the social pawing of Capitola McGurk and the maddening demands of administrative details, which he is unequipped to handle.

His philosophy is the key to the book. To Martin he expounds it:

"To be a scientist—it is not just a different job, so that a man should choose between being a scientist and being an explorer or a bond salesman or a physician or a king or a farmer. It is a tangle of very obscure emotions, like mysticism, or wanting to write poetry; . . . the scientist is intensely religious—he is so religious that he will not accept quarter-truths, because they are an insult to his faith.

"He speaks no meaner of the ridiculous faith-healers and chiropractors than he does of the doctors that want to snatch our science before it is tested and rush around hoping they heal people, and spoiling all the clues with their footsteps; . . . he hates pseudo-scientists, guess-scientists, like these psycho-analysts; . . . he hates the men that are allowed in a clean kingdom like biology but know only one textbook and how to lecture to nincompoops all so popular! He is the only real revolutionary, the authentic scientist, because he alone knows how liddle he knows.

"He must be heartless. He lives in a cold, clear light. Yet dis is a funny t'ing: really, in private, he is not cold nor heartless—so much less cold than the Professional Optimists. The world has always been ruled by the Philanthropists; by the doctors that want to use therapeutic methods they do not understand, by the soldiers that want something to defend their country against, by the preachers that yearn to make everybody listen to them, by the kind manufacturers that love their workers, by the eloquent statesmen and soft-hearted authors—and see once what a fine mess of hell they haf made of the world! Maybe now it is time for the scientist, who works and searches and never goes around howling how he loves everybody!"

Curiously enough, neither the author nor the hero seems to recognize that the painful training which was required to fit Arrowsmith to be a real laboratory researcher, suggests that similar training might have fitted him and Pickerbaugh to be at least very much better health officers than they were. Public health work is not quite a profession in Mr. Lewis' mind, but a way station from being a poor physician to becoming a good laboratory man—or a member of Congress. And yet, it will be less difficult hereafter for the public health man to explain to his friends just what is this dark and nefarious occupation of his. Sinclair Lewis has distinctly put it on the map. The task of moving it from the torrid to the temperate zone is a less difficult one because of what he has done. COURTENAY DINWIDDIE.

Chemotherapy of Tuberculosis— *Experimental Foundation and Preliminary Clinical Results. In Collaboration with Professor Dr. V. Bie, Dr. O. Chievitz, Dr. J. Gravesen, Dr. G. E. Permin, Dr. K. Secher, Dr. Strandgaard and Dr. C. H. Würtzen. By Holger Mollgaard, Professor of Physiology, Physician, Royal Veterinary and Agricultural College, Copenhagen. Copenhagen: Arnold Busck.* Pp. 419.

Alleged cures for consumption come and go. The latest one to claim our attention is called "sanocrysin," obtained by Fordos and Gélis in 1845. It is stated to have the power to prevent the growth of the bovine tubercle bacillus in culture, and when animals are injected subcutaneously with tubercle bacilli and appropriate doses of the gold preparation soon after, the animals are found to be free from tubercles when killed from the thirteenth to twenty-fifth day, while control animals show generalized tuberculosis. Injection of the preparation into normal animals is said to produce no harmful results, whereas tuberculous animals give a severe reaction and show marked changes in the kidney and heart muscle, with edema of the lungs, a fall of temperature, and other ill effects. The serum from normal animals is said to have the power to prevent this severe reaction which the author calls "tuberculin shock." In order to obtain a serum which is even more efficacious in this regard, Madsen has produced an anti-serum by the injection of tubercle bacillus into horses.

The book is divided into two sections, the first of 156 pages, written by Mollgaard; and the second which is edited by Professor Secher, but written by seven physicians who have carried out clinical investigations on human beings. This section gives the detailed history of a number of cases. It is notable for its critical judgment and fairness of statement. Results in surgical tuberculosis have been disappointing and Professor Secher clearly states that much remains to be learned concerning the field of usefulness of the drug, and that "other roads and combinations may perhaps be chosen in the future." He feels, however, that the studies have held out some promise and hopes that methods may be found which may even bring patients suffering from surgical tuberculosis within the scope of beneficial treatment by sanocrysin. The book is profusely illustrated with colored plates, drawings, and x-ray pictures, the latter of the chest.

This JOURNAL has already published an editorial giving an account of most points known concerning sanocrysin. The book goes into much more detail, but is no more convincing than the knowledge previously conveyed. That certain preparations of gold are powerful drugs cannot be doubted. They have been recommended and tried for a number of different purposes. One can hardly escape the conclusion that the symptoms produced in tuberculous animals by sanocrysin have been misinterpreted. While the book is eminently fair and written in a truly scientific spirit, it does not convince one that the cure for tuberculosis has been found. The results of the extensive studies which are being made in this country under expert control must be awaited. The license of the United States Public Health Service must be obtained before the new treatment is put on the market in this country, and we can rest assured that this license will be given if the claims made are justified and will be withheld if they remain unproved. We can only advise our readers to await the results of this investigation. M. P. RAVENEL.

The Hospital Situation in Greater New York —*Prepared by E. H. Lewinski-Corwin, Ph.D., Executive Secretary, Public Health Committee, New York Academy of Medicine. New York: G. P. Putnam's Sons,* 1924. Price, $1.50.

Public health administrators have become accustomed to looking to New York City and its organized medical profession, its social and welfare agencies, for reviews and tabulations of surveys which have been made in that metropolis, and which serve as a guide and model to health and social workers throughout the land.

One of the first and most complete surveys was that made by Dr. Stephen Smith, the organizer and first president of the American Public Health Association, who, with the cooperation of his professional brethren and the interested laity, was able to convince the New York State Legislature of the necessity of establishing a metropolitan board of health. This legislation has withstood the test of time, has been universally upheld by the courts, and has consciously or unconsciously been the model for public health legislation throughout the United States.

Dr. Lewinski-Corwin, as Secretary of the Public Health Committee of the New York Academy of Medicine, now brings forth a monumental report of a survey of hospitals in

New York City made under the general supervision of the committee which he represents. This report will not only be of great service locally, but will be invaluable to physicians, health officers, hospital boards, administrative officials, and others who may desire a model or guide on which they may develop a hospital and health survey in their own communities. The report starts with an interesting historical sketch of the development of the hospital situation in New York. There then appears a tabulation of the hospital facilities as they now exist in New York City, and we especially recommend this chapter as a model or guide for future surveys, and also as a means of comparing some other municipality with New York's hospital facilities. The report then proceeds to a discussion of the problem of illness, hospital finances and administration, and then develops the medical and nursing organization of the various institutions and closes with an analysis of hospital medical records and a discussion of the provision for the care of convalescents. This volume would certainly make a worthy addition to any library, and it is the reviewer's opinion that health and social workers can ill afford to dispense with this book.

HENRY F. VAUGHAN.

Proteins and the Theory of Colloidal Behavior—*By Jacques Loeb, Second Edition. New York: McGraw-Hill Book Co.*, 1924. xvi+380 pp., 115 figs. in text. Price, $3.50.

A second American edition of the late Professor Loeb's classic work on "Proteins and the Theory of Colloidal Behavior" incorporates the corroborative evidence for his theories resulting from his later experiments which have been included in the French and German editions of the work.

The book consists of two parts, the first furnishing the evidence for the stoichiometrical character of the reactions of the proteins and the second developing a mathematical and quantitative theory of colloidal behavior based on Donnan's theory of membrane equilibria. The aim of the book is to show that the supposed new type of chemistry known as colloidal, with laws different from those of general chemistry, is in reality, at least for the proteins, only an unrecognized condition of equilibrium of the type characteristic of classic chemistry. This conclusion is of fundamental significance in the theoretical aspects of the relations of chemistry and biology, since it deals with electrical changes, osmotic pressure, swelling, viscosity, and stability of solution. The author recognizes the necessity for refinement of experimental methods, the need for more data to remove discrepancies and to supplement his initial findings. The loss to science by his untimely death will be the more keenly felt in that this revision does not contain some statement from him interpreting the relations of this new theoretical concept of the proteins to its possible application to the problems of the physiology of the cell. This is a stimulating work of the first magnitude of importance for all who deal with fundamental problems of biology.

C. A. KOFOID.

How Is Your Heart?—*By S. Calvin Smith, M.S., M.D. New York: Boni & Liveright.* 1924. Pp. 208. Price, $1.75.

Diseases of the heart continue to lead the list of the causes of death in this country. There is a downward trend in the mortality curve for many diseases, but public health workers view with alarm the upward trend of deaths from heart disease. In view of these facts, the intimate talks on the prevention of heart disease and on the care of an already damaged heart which Dr. Smith presents are timely and welcome.

He begins by comparing the fatalistic attitude of the past to the present-day conceptions of the heart, in which "heart disease is no longer a term of terror." He proceeds to tell how hearts are hurt by faulty habits, disease, defective teeth, defective tonsils, and other heart loads. In many cases the early signs of heart trouble are disregarded, and the physician is not consulted until advancing signs are present which are suggestive of actual heart involvement.

A person who has contracted heart disease is not to be thrown into life's discard. Even though the heart is defective from circumstances that are past control, the patient is not necessarily condemned to a life of inactivity or invalidism. The author tells how such a person may continue to live when the damage is already done, and suggests appropriate exercise and occupations for the heart patient.

How may heart disease be prevented? The annual physical examination will go a long way toward prevention, assuming that the individual follows the physician's instructions. The author does not say that former heart patients are the only ones who require this

annual overhauling. Every person needs an annual audit of his health, for "the busier a man is the more he needs physical inspection."

The book is written in clear and companionable layman's language. Being free from technical terms, it should prove a valuable asset to the layman whose present grasp of the subject is vague. The value of the book is enhanced by the clever and concise marginal notes which supplement each paragraph E. H. B.

A Laboratory Manual of the Anatomy of the Rat—*By Hamson R. Hunt. New York: The Macmillan Co.*, 1924. x+123 pp. Price, 50 cents.

The usefulness of the white rat as a laboratory animal for experimental work in physiology, metabolism, bacteriology, parasitology, and genetics, is so firmly established that a brief and succinct handbook dealing with its anatomy will be both helpful to and welcomed by many workers in these fields. This rodent is not only destructive to buildings and food supplies but also carries the organisms of infectious jaundice, rat-bite fever, and plague. It may also become a carrier of Endamoeba dysenteriæ, the causative organism of human amoebiasis, especially as it is so often an inhabitant of sewers. It is also incriminated in the maintenance and spread of trichinosis. Pigs are reputed to acquire their infections of *Trichinella spiralis* often from the carcasses of rats killed by trichinosis. The student of medicine, the laboratory technician, the plague specialist, and the parasitologist, all have grounds for an intimate knowledge of the structural peculiarities of this rodent. The book is a descriptive analysis of the organ systems set forth as laboratory exercises, without diagrams or illustrations. The addition of such diagrams and the inclusion of an accurate account of the lymphatic glands in the next edition will increase the usefulness of the work to public health workers. C. A. K.

Racial Realities in Europe— *By Lothrop Stoddard. New York: Charles Scribner's Sons*, 1924. 252 pp., 3 maps. Price, $5.00.

This work presents the racial background of the peoples of Europe with a view to a better understanding of the past history and present troubled condition in the world at large. As might be expected the Nordic element looms big in his analysis and interpretation. His treatment rests on the historical rather than the ethnological or anthropological basis. The closing chapter is a clear presentation of the necessity of a popular understanding of the significance of racial differences and a frank recognition of their value and importance in all international, political and social matters where race is a factor. Sentimental optimism as a basis of internationalism should be superseded by a frank recognition of racial factors and a sustained effort to appraise these factors by scientific analysis. C. A. KOFOID.

Eye Hazards in Industrial Occupations.— *Louis Resnick and Lewis H. Carris, National Committee for the Prevention of Blindness, Inc., 130 E. 22nd St., New York City. Publication 26. April, 1924. 247 pages. Paper, $1.50. Fabrikoid $2.50.*

This is a hand book for safety engineers, safety inspectors, safety committee men, industrial physicians and nurses. Also for industrial administrators, government officials, and social agencies. It is a completely revised edition of the work which appeared in 1917 under the same title, necessitated by the many new hazards that have developed or been discovered and the greatly increased amount of information accumulated. The numerous illustrations are constructively educational. The authors are well known as directors of the National Committee for the Prevention of Blindness. Mr. Resnick was formerly editor of the *National Safety News*. The volume discusses the nature and causes of eye injuries; eliminating eye hazards by engineering revision; a very extensive chapter on the means for prevention of eye hazards; first aid treatments; principles for the correction of defective vision, also its prevalence; industrial lighting; education as to safety; the effects of the safety movement upon the subject; an excellent short chapter on industrial poisons presenting eye hazards; and the "goggle code" of the American Steel and Wire Co. There is a classified reference list of works upon all phases of the subject and an excellently complete index. The volume which is well bound and printed on high grade glazed paper, should be in the hands of every one of the types of persons mentioned in the first part hereof. E. R. HAYHURST.

Collected Papers on Beri-beri—*By H. Fraser and A. T. Stanton. London: John Bale, Sons & Danielsson, Ltd.*, 1924.

This little book consists of a collection of ten original papers dating from 1909 to 1918.

Starting with the recognition of the fact that the incidence of beri-beri is greatest among rice-eating peoples, and taking into account the research work of previous investigators, the authors set out to establish or disprove the part played by white, or polished, rice as the etiological factor in beri-beri.

Experiments on fowl and also adequately controlled feeding experiments upon selected groups of Javanese laborers under medical supervision were conducted.

One controlled group of eighty-five persons remained continuously on a diet of which the staple constituent was parboiled rice. This is not the polished white rice, but is so prepared that the aleuron layer of the endosperm is for the most part preserved and fragments of the pericarp remain. In the polished white rice these are missing. Of the eighty-five persons in this control group no case of beri-beri developed in the 172-day period of the experiment.

Another group of 35 on absolutely the same diet as the first, excepting that white rice was fed in place of parboiled rice, developed five cases of beri-beri during the period covered by the experiment.

These two groups occupied the same quarters and intermingled freely during the time they were under observation. This would tend to rule out infection as a source, which is further ruled out by the fact that an outbreak of amoebic dysentery during the experiment attacked members of both groups indiscriminately.

Change of quarters and of location had no effect upon the incidence or course of the disease, but all cases cleared up promptly and no new ones developed when parboiled rice was substituted for the white.

From the above experiments and other well developed data contained in the book, the authors conclude that white polished rice when forming the staple article of diet in man, has been shown to be the cause of beri-beri.

The book is well written, interesting, and quite concise. Its contained experiments have been clearly conceived and accurately executed. In it are also given valuable data on the chemistry of rice. A. G. BOWER.

HEALTH DEPARTMENT REPORTS

IRA V. HISCOCK

Providence, **Rhode Island**—Health workers welcome the appearance of the reports of the Superintendent of Health of Providence because they always contain valuable information concerning health practice. The forty-first annual report for the year 1923 is no exception to this rule and includes in 27 pages a large amount of interesting data.

Bound in blue paper covers, the front cover and title page bearing the seal of the city, and printed in readable type, the entire report corresponds as closely as any we have thus far seen to a model report for a city of this size. Following the table of contents is a statement of the organization of the Board of Health (Board of Aldermen ex-officio) and of the health department. A detailed financial statement early in the report compares the receipts and expenditures of 1921-22 with those of 1922-23, the figures for the latter year showing an increase of more than $30,000 over the appropriation of the previous year, and including the contract for garbage removal, amounted to approximately 86 cents per capita.

An instructive statistical table covering the years 1914 to 1923 shows that this city of 242,000 population in 1923 had a birth rate of 26.44, a death rate of 14.78, and a marital rate of 22.24 per 1,000 of population. The birth rate and marriage rate have shown an upward trend during the period while the death rate has displayed a downward tendency.

The results of physical examination of school children are particularly interesting in showing a somewhat gradual decrease in the percentage of children found defective during the past eight years (65 per cent in 1916, 53 per cent in 1923), together with a large percentage of total treatments secured (78 per cent) in proportion to the number advised in 1922-23.

A tabular statement concerning hospitalization of communicable diseases indicates that from 1910 to 1924, an average of 37.8 per cent of the city cases of scarlet fever, 34.5 per cent of the cases of diphtheria, and 7.7 per cent of the cases of measles have been removed to hospitals. Diphtheria immunization work has progressed and it is interesting to note that of 2,968 children Schick-tested before treatment in 1923 to 1924, 56.4 per cent were found positive, the younger age-groups, as we might expect, having the highest proportion of positive results. Those having positive tests were immunized. The detailed report on vital statistics is issued separately as is the report of the City Hospital.

Detroit, Michigan—Following past custom the January number of the *City Health Bulletin* contains an interesting account of the health organization in that city and the results achieved during the past year. The statistical aspect of the report is confined to such figures as seem absolutely necessary to bring out the facts, and the tabular material is supplemented by carefully prepared charts and graphs.

The primary functions of the health department are stated to be the prevention of the spread of disease, the curtailment of disease and physical handicaps, and the building up of positive robust health. To accomplish these results, a well organized health department has been set up as shown by a tabular statement in the report and indicated in the results obtained. Headed by a health administrator of recognized ability, with the assistance of a trained executive staff working under a board of health, the health department functions through eight bureaus: Administration, Sanitary Engineering, Records and Accounts, Food Inspection, Laboratories, Medical Service, Herman Kiefer Hospital and Spring Hills Sanatorium (municipal tuberculosis sanatorium). These bureaus are in turn subdivided into divisions. The total per capita appropriation for public health for the year ending June 30, 1925, is stated to be $1.86. Approximately 78 cents is used for hospitals and sanatoria, and 85 cents for other health activities, the remainder being used for capital costs and for a special smallpox outlay.

Among the outstanding features of the health situation for 1924 are recorded: a saving of 1,181 lives as a result of the next to the lowest death rate in the city's history (11.4 per 1,000 population); a saving of 286 babies' lives as a result of the lowest infant mortality ever experienced in Detroit (78.3 per 1,000 births); 213 more babies born than would have been born had the 1923 birth rate continued, the birth rate in 1924 being 27.0 per 1,000 population; the lowest diphtheria and typhoid fever death rates in the history of the city (diphtheria 14.3 and typhoid 2.7, respectively, per 100,000 population). As a result of the recent smallpox outbreak in Detroit, it is believed, according to the report, that the city has learned the value of vaccination and revaccination in preventing this disease. It is also pointed out that the influx of an unvaccinated population can do incalculable harm. It is noteworthy that Detroit's industries have been asked and most of them have agreed to insist upon vaccination of all applicants for employment before they are given employment. As in many other cities, the year 1924 was the worst in the history of the city as far as automobile accidents were concerned, 302 persons having lost their lives in this manner.

One of the interesting features of health work in Detroit is that which aims to show through care of well people that such practice saves lives and increases health and happiness. The work of the child welfare division, for example, affects the prenatal, postnatal, baby and preschool periods, and combined with the work of the Division of School Inspection offers a continuous service beginning with the pregnant mother and going on through the child's school career. The reduction in infant mortality has already been noted. As indicated in the report, the benefits from school inspection are to be looked for years hence. "When we are able to have every child go to its own family physician every year, and when we have the physicians ready to receive and ready to properly examine this army of children, then we feel that we shall have accomplished the utmost in school medical work."

The nursing division is under the direction of a chief nurse and is a part of the Bureau of Medical Service. Its personnel includes 213 nurses who are carried on the payrolls of the various divisions to which they are attached. In addition to the supervising and head nurses, there are 6 grades of nurses, based on the length of service with the department. Practically 37 per cent of the total health appropriation, exclusive of hospital and capital costs, is for public health nursing.

Connecticut—The report of the Public Health Council and the Commissioner of Health of Connecticut for the year ending June 30, 1924, is one of general progress. This report contains an organization plan of the council and of the directors and chiefs of the administrative staff, together with individual photographs of the members. A classified financial statement for the period is also published.

Considerable attention has been given by the council to problems connected with medical registration and licensure, and to the desirability of revision of the medical practice act. Existing laws compel the State Department of Health to issue licenses without discrimination on the certificate of independent examining boards and to appoint the members of those boards on the nomination of private state medical organizations. It is stated as the opinion of the council that the logical way to handle this matter is by the creation of a single independent board of licensure with authority to determine the fundamental scientific qualifications of applicants for the practice of medicine of any and every school.

One of the outstanding recommendations is for an extension of maternal and child hygiene and nursing service (in which important strides have already been made), particularly the development of public health nursing work in the small communities of the state. Legislation is urged enabling the state to reimburse a part of the cost of nursing service in rural districts, on the plan used in connection with state grants for education and as concerns nursing service in states like New York and Pennsylvania.

By the application of methods utilized by the National Conservation Commission, the Commissioner of Health has estimated that nearly a $2,000,000 dividend was returned to the people of the state in lives saved during 1923 compared to five years previous by the decrease in deaths from certain diseases. According to this method, if the economic value of an adult life is $5,000 and there are 100 typhoid deaths a year there would be a loss of $500,000 in typhoid fever deaths alone without considering the cost of 900 odd cases that recovered. In like manner, if the economic value of a child is $1,000 and there are 200 deaths a year from diphtheria, the diphtheria loss in deaths alone would be $200,000; or if the life of babies is placed at $500 and there are 100 deaths a year from whooping cough the loss would be $50,000. By this means it is possible for a health administrator to calculate in monetary terms his losses or savings effected in human lives from year to year.

This report also contains the rules and regulations adopted since the previous report, including problems of camp ground sanitation, sanitation of watersheds, special occupations, and care of dead bodies, together with suggested regulations concerning the medical examination of food handlers.

Palo Alto, California—The annual report of the health department of Palo Alto for the year ending December 31, 1924, gives a concise account of the purpose and scope of health work and the results obtained in this progressive community.

Opposite the inside title page, an organization chart informs the reader of the relation of the health department to the board of public safety, the city council and the people, and shows the duties performed by each officer of the health department. It is also gratifying to note a carefully prepared financial statement which indicates for what purposes the taxpayers' money is expended. Incidentally it is worth mentioning that in this community of approximately 7,300 people, for the fiscal year ending June 30, 1925, the health department asked for and received an appropriation which represents a per capita expenditure of $1.18.

From an original study of the state and local death rates it is reported that the rate for Palo Alto from preventable causes has in recent years been maintained at approximately 2 per 1,000, being 2.18 in 1924, while the crude death rate from all causes was 12.5, with an actual resident death rate of 9.8. In the state of California, the number of persons dying from preventable causes during the period studied was approximately 5 per 1,000 population, and amounted to 4.5 in 1923, or about twice that for Palo Alto. For the ten-year period preceding 1924, there was recorded an infant mortality rate of 44.0, the rate for 1924 being 56.9. The report is well illustrated by graphs and tables (the latter, incidentally, might be improved by the use of standard type), and is a credit to the department.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY

ADAMS, B. A. The "Iodoform" Taste Acquired by Chlorinated Water. *Med. Off.*, 33:131, March 21, 1925.

Chief cause of the "iodoform" taste is absorption of some constituent in the atmosphere, probably of a phenoloid character derived from gasworks and imperfectly burnt coal. Chlorinated water should not be exposed to air, especially in the proximity of towns or gasworks.

BARWISE, SIDNEY. Some Observations of Maternal Mortality. *Med. Off.*, 33:109, March 7, 1925.

Changes in midwifery service and standards of midwifery in medical practice are necessary to lower England's present rate of 4 maternal deaths per 1,000 live births.

BARKER, LEWELLYS F. The Nature, Causes and Prevention of "Nervous Breakdowns." *Canad. Lancet & Prac.*, 64:159, April, 1925.

All "nervous breakdowns" are also minor or major mental disturbances. Their causes must be sought in inheritance, in environment, or both. Prevention includes many social and biologic factors.

BENSON, W. T. Diphtheria Prevention—The Schick Test and Active Immunisation in Various Schools and Institutions in the City of Edinburgh. *Lancet*, 207:949, Nov. 8, 1924.

Campaign procedure adopted. Analysis of results obtained after testing 3,457 and immunizing 2,104 persons.

BOORSTEIN, SAMUEL W. Foot Strain. *New York State J. M.*, 25:519, March 27, 1925.

The most common predisposing cause of flat feet is improper shoes. People with occupations requiring standing should be especially careful about care of the feet, including choice of shoe. Symptoms of foot strain and how to relieve it.

BURGESS, PHILIP. Sewage Disposal and Water Purification in the Upper Ohio River Basin. *J. Am. Water Works Assn.*, 13:293, March, 1925.

Effects of industrial development and population increase on stream flow. Results of purification plants and need for better disposition of sanitary and industrial wastes in this area.

DONALDSON, HENRY H. On the Control of the Rat Population. *Science*, 61:305, March 20, 1925.

Recent laboratory studies show that the rate of reproduction of rats is largely controlled by food supply.

DUNHAM, G. C. The Annual Physical Examination of Army Officers in 1924. *Mil. Surgeon*, 56:348, March, 1925.

A statistical study of 11,789 reports received by the War Department, with tables and charts showing number and kind of defects in several army groups.

EICHEL, OTTO R. Results of Investigations of Causes of Death at Childbirth. *New York State J. M.*, 25:555, April 3, 1925.

A presentation of some general provisional statistics on puerperal mortality in New York State, accompanied by charts.

FALK, I. S. Some Riddles in Epidemiology. *Scient. Monthly*, 20:383, April, 1925.

Some riddles in etiology, in the significance of telluric phenomena, in age, sex and race factors, and in the epidemiology of plague, influenza, tuberculosis and malaria.

FEATURES OF DESIGN IN 1,000-FOOT OUTDOOR SWIMMING POOL. *Eng. News-Rec.*, 94:434, March 12, 1925.

Independent retaining walls, floor in sections, and complete under-drain system are features of San Francisco's new pool.

FRANKEL, LEE K. The Health of the Worker. *Hygeia*, 3:217, April, 1925.

Sanitation of an ideal factory with special mention of light and ventilation. Industrial medical care and the importance of periodic physical examinations for workmen.

FUGATE, G. L. Activated-Sludge Experiments on Packing House Wastes. *Eng. News-Rec.*, 94:443, March 12, 1925.

Studies of surface and diffused air aeration lead to design of activated sludge plant for Houston Packing Co. Company treatment plant preferred to treatment by city of Houston.

GARROW, R. P. Parasmallpox. *Pub. Health* (London), 38:141, Feb., 1925.

A clinical description of the disease, based on personal observation of 500 cases, together with vaccination histories.

HALL, W. W. Iodin Prophylaxis of Goiter. *U. S. Nav. M. Bull.*, 22:148, Feb., 1925.

Prophylactic administration of iodin should be carried out as a public health measure in all areas with low iodin content of water supplies.

HALSEY, ROBT. H. Economic Aspects of Heart Disease. *Scient. Monthly*, 20:282, March, 1925.

This greatest single cause of death is causing huge economic losses which are in a large measure preventable.

HOLMQUIST, C. A. Relation of Improvements in Water Supplies to Typhoid Fever and Other Intestinal Diseases. *J. New Engl. Waterworks Assn.*, 38:237, 1924.

Statistical study showing decrease of intestinal diseases following improvement in water supplies in several American cities.

HULBERT, L. A. Rural School Medical Inspection. *Med. J. & Rec.*, 120:338, March 18, 1925.

Over half the school children in the United States attend rural schools and the health of nearly 50 per cent of these is being neglected under some present systems. Organized system of inspection, education, and followup work, including health centers and clinics needed.

KAISER, ALBERT D. The Incidence of Infections in Tonsillectomized Children. *New York State J. M.*, 25:469, March 20, 1925.

Comparison of 1,200 tonsillectomized children with the same number not operated upon. Tonsillectomy offers relief from attacks of sore throat and head colds; lessens chances for ear and glandular infections, and lessens incidence of heart disease and diphtheria.

KELLEY, EUGENE R. Preventive Medicine from Your Family Physician. *Boston M. & S. J.*, 192:618, March 26, 1925.

A novel plan of the Massachusetts State Department of Public Health, recommending that persons go to their private physician for prophylaxis against smallpox, typhoid and diphtheria, as well as for periodic health examinations.

KINGSBURY, JOHN A. The Effect of the Anti-Tuberculosis Campaign. *World's Health* (Paris), 6:63, Feb., 1925.

A review of some activities and what they have accomplished. Tuberculosis death rate has been decreased through efforts of various agencies in spite of the claim of one school that the diminution in mortality would have occurred even if these campaigns had not taken place.

MCCLELLAND, HAROLD. Results of a Series of Schick Tests. *Pub. Health J.* (Canada), 16:66, Feb., 1925.

A statistical presentation of 2,149 tests performed in the Hospital for Sick Children, Toronto, during 1921 to 1923, inclusive.

MILLER, LEWIS B. A Study of the Effects of Anions upon the Properties of "Alum Floc." *Pub. Health Rep.* (U.S.P.H.S.), 40:351, Feb. 20, 1925.

Importance of the negative ion content of the solution in relation to some of the chemical and physical properties of alum floc. Possible applications of the principles discussed, especially the coördinate importance of the aluminum and sulphate ions for current water works practice.

NATIONAL HEALTH INSURANCE. *Pub. Health* (London), 38:173, March, 1925.

Report of representatives of the Society of Medical Officers of Health given before the Royal Commission on National Health Insurance, setting forth the objects and value of insurance together with recommendations for improving the present system.

PANGBURN, WEAVER. Recreation in Small towns. *National Munic. Rev.*, 14:145, March, 1925.

Organized recreation has been a good investment in towns of 2,500 population and less. A review of typical achievements.

PARSONS, FREDERICK W. Community Provision for Mental Illness. *New York State J. M.*, 25:570, April 3, 1925.

Provisions for discovery, examination, temporary care, and prevention should be undertaken. Clinics assume first place in prevention.

RICE, JOHN L. Public Opinion and the Health Department Budget. *Nation's Health*, 7:188, March 15, 1925.

A health department should know the local situation in determining which health activities should be carried on. Public opinion should assist board of finance in its valuation of proposed public health programs.

ROGERS, JAMES FREDERICK. What Every Teacher Should Know About the Physical Condition of Her Pupils. Health Education, No. 18 (Dept. of Inter. Bur. of Ed.), 1924, 23 pp.

Defects of which the teacher should be cognizant, and warning signs of communicable disease.

ROSENAU, M. J. Seasonal Prevalence of Disease. *Scient. Monthly*, 20:192, Feb., 1925.

A discussion of the periodicity of disease incidence which expresses itself in seasonal prevalence and the causes of such prevalence.

SAYERS, R. R. Making the Mine a Safe Place to Work. *Nation's Health*, 7:161, March 15, 1925.

Rock dust to prevent explosions, control of gases, proper disposal of underground sewage, adequate illumination and a safe water supply are essentials for the miner's health.

SHAW, W. V. Report on an Outbreak of Paratyphoid Fever in the Borough of Charley. Reports on Public Health and Medical Subjects No. 30. London: His Majesty's Stationery Office, 1925, 8 pp.

Epidemiological features of 52 cases caused by milk infected with Bacillus Paratyphosus B.

SMITH, L. W. The Experimental Feeding of Dried Breast Milk. *J. Biol. Chem.*, 61:625, 1924.

Young guinea pigs were fed human milk, dried by a modification of the Just-Hatmaker process. When freshly prepared, 80 per cent of its antiscorbutic value is retained and about 40 per cent after two years.

SWEANY, HENRY C. The Outlook for the Tuberculous Patient. *Med. J. & Rec.*, 120:327, March 18, 1925.

Efforts of public health and social organizations will decrease the tuberculosis death rate until the downward trend meets the upward rise of the effects of congestion and industrialization. This deadlock must be broken by new measures originating in the laboratory.

THOMSON, J. W. Age as a Factor in Diabetic Mortality. *Boston M. and S. J.*, 192:532, March 19, 1925.

Statistical study accompanied by graphs, showing decrease in general mortality in the registration area of the United States for the four decades between 1890 and 1920, and the rise in diabetic mortality.

TURRENTINE, J. W. Kelp as an Agent for the Control of Goiter. *Scient. Monthly*, 20:27, Jan., 1925.

A review of goiter incidence, with a discussion of the merits and use of kelp in the dietary.

TYPHOID FEVER AND CROSS-CONNECTIONS IN ILLINOIS. *Eng. News-Rec.*, 94:526, March 26, 1925.

Twelve cases of typhoid and paratyphoid fever in a single factory, due to a cross-connection between a polluted river-water-supply

system and a piping system connected to the city mains.

WADSWORTH, AUGUSTUS. A Convenient Outfit for the Schick Test. *J. Lab. & Clin. Med.*, 10:495, March, 1925.

Description of an outfit for state-wide use, with a detailed account of a method of preparing it.

WADSWORTH, AUGUSTUS. Serum Therapy of Pneumonia in New York State. *New York State J. M.*, 25:528, March 27, 1925.

Results of serum treatment in several groups. Anti-pneumococcus type I serum of known high potency may be of definite value.

WANKLYN, WILLIAM. Smallpox Clearance. *Med. Off.*, 33:119, March 14, 1925.

Smallpox is a tax on health, industry and financial resources. It is unnecessary and should be eliminated as soon as possible.

WHIPPLE, GEORGE C. Value of Vital Statistics to Small Towns. *Am. City*, 32:269, March, 1925.

Accurate reports of vital statistics as important for small towns as cities for contributing to the science of preventive medicine. Caution required in comparing death-rates of small towns.

WILINSKY, CHARLES F. Correlation of Official and Un-Official Health Agencies in the Public Health Program. *Boston M. & S. J.*, 192:438, March 5, 1925.

Both official and non-official agencies work toward the same objective. However, correlation must exist, duplication be avoided and friction eliminated. Leadership should rest with the constituted public health agency.

World Prevalence of Human Plague in 1923. *Pub. Health Rep.* (U. S. P. H. S.), 40:191, Jan. 30, 1925.

A statistical report with tables and charts. Comparative data for four years previous to 1923 for important endemic areas, with special reference to the increased prevalence in India and Egypt.

BOOKS RECEIVED

Books received during March are listed here. Many of these will be reviewed.

THE GROWTH OF THE MIND. By Kurt Koffka. Translated by Robt. Morris Ogden. New York: Harcourt, Brace, 1924. Pp. 383. Price, $4.50.

YOUTH IN CONFLICT. By Miriam Van Waters, Ph.D. New York: The New Republic, 1925. Pp. 293. Price, $1.00.

ELEMENTS OF PHYSICAL BIOLOGY. By Alfred Lotka, M.A., D.Sc. Baltimore: Williams & Wilkins, 1925. Pp. 460. Price, $5.00.

THE EXAMINATION OF WATERS AND WATER SUPPLIES. By John C. Thresh and John F. Beale. Philadelphia: Blakiston, 1925. Pp. 590. Price, $7.50.

CHEMOTHERAPY OF TUBERCULOSIS. By Holger Mollgaard. Copenhagen: Nyt Norsik Forlag (Arnold Busck), 1924. Pp. 419. Price, $7.50.

LORD LISTER. By Sir Rickman John Godlee, Br. 3rd ed. rev. New York: Oxford University Press, 1924. Pp. 685. Price, $7.00.

AN INTRODUCTION TO PRACTICAL BACTERIOLOGY (AS APPLIED TO MEDICINE AND PUBLIC HEALTH). By T. J. Mackie, M.D., D.P.H., and J. E. McCartney, M.D., D.Sc. New York: William Wood, 1925. Pp. 297. Price, $3.50.

NOUVEAU TRAITE DE MEDECINE, Fasc. 5, Vol. 1, Maladies Infectieuses et Parasitaires, 2nd ed. By G. H. Roger, F. Widal, P. J. Teisser. Paris: Masson et Cie., 1924. Pp. 452. Price, 40 fr.

UNIFORM MEDICAL PROVISIONS FOR WORKMEN'S COMPENSATION ACTS IN THE UNITED STATES. Special Report Number 1. New York: National Industrial Conference Board, Inc., 1925. Pp. 28.

THE INHERITANCE OF MENTAL DISEASES. By Abraham Myerson, M.D. Baltimore, Williams & Wilkins, 1925. Pp. 336. Price, $5.00.

RECOMMENDATIONS INCLUDING BRIEF STATEMENT OF FINDINGS AND CONCLUSIONS. The Engineering Board of Review of The Sanitary District of Chicago on the Lake Lowering Controversy and a Program of Remedial Measures. Chicago, December 20, 1924.

HANDBOOK OF BACTERIOLOGY. By Joseph W. Bigger, M.D. New York: William Wood & Co., 1925. Pp. 413. Price, $5.00.

CLINICAL PSYCHOLOGY. By Louis D. Bisch, M.D., Ph.D. Baltimore: Williams & Wilkins, 1925. Pp. 346. Price, $3.00.

LIVES AND TIMES. Four Informal American Biographies. By Meade Minnigerode. New York: Putnam, 1925. Pp. 215. Price, $3.50.

CHILD HYGIENE. By S. Josephine Baker, M.D., Dr.P.H. New York: Harper, 1925. Pp. 534. Price, $5.00.

THE CELL IN DEVELOPMENT AND HEREDITY. By Edmund B. Wilson. Third Edition. New York: Macmillan, 1925. Pp. 1,232. Price, 9.00.

HUMAN CONSTITUTION. A Consideration of Its Relationship to Disease. By George Draper, M.D. Philadelphia: Saunders, 1924. Pp. 345. Price, $7.50.

PRINCIPES D'HYGIENE ET DE MEDECINE COLONIALES. By M. Neveu-Lemaire. Paris: Societe D'Editions Geographiques, Maratimes et Colonials, 1925. Pp. 278. Price, paper cover, 16 frs.

CHILD MARRIAGES. By Mary E. Richmond and Fred S. Hall. New York: Russell Sage Foundation, 1925. Pp. 159. Price, $1.50.

REPORT OF SECOND INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY. Rome, May-June, 1923. By Commander William Seaman Bainbridge, M.C. Reprinted from *The Military Surgeon*, December, 1924, January and February, 1925. Washington, D. C., 1925. Pp. 148.

FEEDING, DIET AND GENERAL CARE OF CHILDREN. By Albert J. Bell, A.B., M.D. 2nd Edition. Philadelphia: Davis, 1924. Pp. 290. Price, $2.00.

FROM INFANCY TO CHILDHOOD. By Richard M. Smith, M.D. Boston: The Atlantic Monthly Press, 1925. Pp. 105. Price, $1.25.

THE VENTILATION OF PUBLIC BUILDINGS. By Robert Boyle. London: Robert Boyle & Son, 1923. Price, 6/- net.

MODERN MARRIAGES. By Paul Popenoe. New York: Macmillan, 1925. Pp. 259. Price, $2.50.

MEDICINE: AN HISTORICAL OUTLINE. By M. G. Seelig, M.D. Baltimore: Williams & Wilkins, 1925. Pp. 207. Price, $2.25.

Anotaciones sobre la Piorrea Alveolodentaria. By Maurice Nouel, Ph.B., Dr.Pharm. Contribucion al Cuarto Congreso Venezolano de Medicina Celebrado en Caracas. December, 1924.

Tratamiento de la Neurosifilis. Tema de Ponencia. Memoria Presentada al Primer Congreso Mexicano de Venereologia por Angel Brioso Vasconcelos. Reimpreso de la "Revista de Ciencias Medicas," Tomo III, No. 1. Correspondiente al mes de Marzo de 1923.

State of Illinois, Department of Registration and Education. Division of the State Water Survey. Bulletin No. 20. Comparison of Chemical and Bacteriological Examinations Made on the Illinois River During a Season of Low and a Season of High Water. 1923–1924. By R. E. Greenfield.

The Use of Fish for Mosquito Control. International Health Board of The Rockefeller Foundation. 1924.

Malaria Research Unit, Department of Health. Haifa, Palestine. Annual Report, 1923.

PUBLIC HEALTH NOTES

Medical Society Urges Reappointment of Health Officer—The St. Louis Medical Society has broken a long standing tradition to adopt a resolution with a political implication. On the eve of a mayoralty election in St. Louis it has unanimously adopted the following resolution:

WHEREAS, Dr. Max C. Starkloff has been the Health Commissioner of the City of St. Louis for the past thirty years; and, whereas, his service has been equal in efficiency, prospective and untiring energy to that of any health officer in the country; and, whereas, he has the whole confidence and respect of the medical profession as well as the laity; therefore be it

RESOLVED, that the St. Louis Medical Society go on record as recommending to the next Mayor of St. Louis, Dr. Starkloff's reappointment as Health Commissioner.

Poisoning by Potatoes—The enormous use of the ordinary Irish or white potato, *Solanum tuberosum L.*, gives interest to anything concerning this much used food. It has long been known that potatoes contain a certain amount of solanin, and that the amount is very much increased when the potatoes are completely ripe or when they are sprouting. A number of outbreaks of poisoning have been reported from Europe, but America has been singularly free from such cases. In one of the cases reported from Germany, 56 soldiers of one company were made seriously ill from eating sprouted potatoes. Analysis showed that the amount of solanin had been greatly increased over that found normally, so that each man who had eaten his full portion had received 0.3 gm. of the poison. It must not be forgotten that the potato belongs to the family which includes belladonna, stramonium, hyoscyamus and tobacco, all of which are powerful narcotic poisons.

The first fatal case in America which has come to the attention of the writer occurred in Vandalia, Illinois, in October, 1924. A farmer gathered some potatoes from a patch which had been covered with straw. They were distinctly green, due to the fact that the straw had been scattered by chickens, exposing the potatoes to the sunlight. Two days after eating the potatoes, all of the family excepting the father, consisting of mother, two daughters and five sons, were taken ill, the symptoms being epigastric pains with nausea and vomiting, extreme thirst in some, difficult and rapid respiration, and marked prostration. The father escaped, having been the only one who did not eat of the potatoes. The mother and one daughter died after two days' illness.

Several cases of poisoning in animals have been reported in this country. In one case 64 cows were poisoned by eating freely of potatoes. In another 6 pigs died after eating sprouted uncooked potatoes, and in Indiana 30 chickens were fatally poisoned after eating green potato sprouts. Horses have also been poisoned by eating old and sprouted potatoes.

While the possible poisoning by old and sprouted potatoes has been known to physicians and chemists for some time, the public is apparently unaware of the danger. In fact, it has been widely mentioned as a curious fact that while the potato belongs to such a poisonous family, it contains no poison itself.

The cases illustrate that in addition to the danger from fully ripened and sprouted potatoes, those which have been exposed to the light and have taken on a green color, also develop the poison to a dangerous amount.—*Science*, March 27, 1925. M. P. R.

Advertising Approved Water Supplies—The Minnesota State Board of Health is arranging for the posting of signs on public highways entering certain municipalities in the state informing the traveling public, particularly the tourist, that the water supply of the particular town has been approved as safe by the State Board of Health. The signs to be erected will be approximately 18 inches in width by 24 inches in height and will be attached to the same standard and immediately below the highway sign bearing the name of the municipality.

In the case of state trunk highways, the signs will be placed by the State Highway Department as directed by the State Board of

Health and arrangements will be made for the posting of these signs through the County Highway Engineers on other roads.

Municipalities which are permitted to post these signs agree to have the water supplies investigated at least once each year and to make any reasonable changes, alterations, improvements, or repairs to the water supply system which may be necessary from time to time in order to maintain the system in a satisfactory and approved condition, and to advise the State Board of Health in advance when any changes in the system are contemplated and to notify immediately the State Board of Health in case of any accident to the system which might impair the sanitary quality of the water. These municipalities further agree to make no objection to the removal of said highway signs in case the water supply is at any time found to be in a condition which would be considered unsatisfactory from a sanitary point of view by the State Board of Health.

It is felt that the posting of these signs advising the traveling public, particularly the tourist, as to which water supplies are safe for drinking purposes will be information which will be greatly appreciated by many. Incidentally, it is good advertising for the municipality, and should encourage other cities and villages whose water supplies are not already safe to make the necessary changes so as to place them on the approved list.

A Study of Federal Health Work—Under the auspices of the Institute for Government Research, an intensive survey of the public health activities of the United States government is being made by Mr. James A. Tobey. Preliminary studies have shown that there are at least twenty-six bureaus or other branches of the government which are directly or indirectly interested in some phase of public health. Sanitarians have long recognized the desirability of an effective coördination of these scattered functions and have frequently recommended that it be brought about. An endeavor will be made, with the advice of health workers and specialists in political science, to formulate a definite plan for correlation, providing for no new expansion, but simply a more effective and economical rearrangement of existing federal health activities. Students of government and of public health agree that the problem is a complex one, but it is hoped that a practical scheme may be ready for presentation to the Sixty-Ninth Congress when it meets next December.

Visit of Latin-American Health Officers—Surgeon General Hugh S. Cumming of the United States Public Health Service, in cooperation with various state and city health officers, has arranged the itinerary and program of the International Interchange of Health Officials, a movement carried out under the auspices of the Health Section of the League of Nations.

The present Interchange consists entirely of delegates from Latin-American countries, including Mexico, Cuba, Paraguay, Salvador, Venezuela, Brazil, Costa Rica, Uruguay, Peru and Argentina.

Stops have been made in places offering different kinds of problems for investigation, covering anti-malaria work and sanitation of milk in Louisiana and malaria, typhoid fever and hookworm control in Alabama. In Washington, where they will arrive April 6, Surgeon General Cumming will welcome them and arrange a program of intensive study of federal health administration as it exists in the United States. Lectures will be given by the Surgeon General and members of his staff.

Four days will be given in Maryland for a study of health activities under the direction of the State Health Officer, and of teaching methods at Johns Hopkins University Medical School, after which they will visit New York where ten days will be devoted to a study of municipal sanitation, laboratory methods, hospitals and other important matters connected with health work, together with the activities of the federal government in the administration of the quarantine and immigration laws at Rosebank and Ellis Island.

The party is in charge of Dr. Louis Destouches of the National Health Committee of the League of Nations. H. S. Cumming, Surgeon General, U. S. P. H. S. *Health News.*

The North Jersey Association of Physicians and Surgeons—There has been recently organized in North Jersey the Association captioned in the title of this item. The first meeting was held January 29 at the Garfield plant of the Forstmann and Huffman Co., Passaic, N. J., and the second March 20, at the Newark Athletic Club. The association has been formed with prospect of some 40 members. Dr. E. C. Jackson, Edison Lamp Works, is President.

LABORATORY

C. C. YOUNG *

The **Epidemiological Classification and Significance of Diphtheria Carriers****—Classification—For the purpose of coördinating the office, field and laboratory studies in diphtheria carriers we have used the following classifications: 1. Incubatory, 2. Convalescent, 3. Direct contact, 4. Remote contact.

1. An Incubatory Carrier is an individual upon whom we have identified infectious agents within the incubation period prior to the onset of clinical symptoms.

Number: The number of incubatory carriers in a community is always the same as the number of cases of diphtheria developing the following week. The number varies directly with the size of the outbreak, and the point in the outbreak at which the study is made.

Virulence: Incubatory carriers harbor organisms that are 100 per cent virulent. They have been tested on human beings and found so, which is probably better than the test on guinea pigs.

Significance: The degree of danger from incubation carriers is high because of the fact that the bacilli are of disease causing type, in all instances.

2. The Convalescent Carrier is an individual who harbors infectious agents after clinical symptoms have ceased.

Number: In a careful study of over one thousand hospital patients it was found that organisms could be recovered from the noses and throats of diphtheria cases as follows:

after 2 weeks 64%	after 5 weeks 8%
after 3 weeks 29%	after 6 weeks 4%
after 4 weeks 16%	after 7 weeks 2%

It was striking that it took eight weeks to reduce the number of convalescent carriers to 2 per cent. This is about the proportion of diphtheria carriers found in the general population.

Virulence: 85 per cent to 90 per cent of all these organisms were virulent in the sense that they produced diphtheria toxin. It was noted that the closer in time to the clinical illness that the organisms were recovered, the higher the proportion of finding of toxin formation, and conversely, the further removed in time from the clinical illness the smaller the proportion of organisms forming toxin. However, a small number of these patients were found to harbor highly virulent organisms for long periods of time.

Significance: It should be noted that diphtheria patients harbor diphtheria bacilli much longer after clinical illness than is usually supposed. It is also striking that a larger proportion of them do this than studies on a smaller number of cases would lead us to believe. The proportion of virulent organisms found is so high that the convalescent carriers released from quarantine by the usual methods probably contribute no small part in the spread of this disease.

3. The Direct Contact Carrier is a carrier who is in direct contact with a case.

Number: As a result of careful studies as yet too small to use for generalizations it appears that from one-fifth to one-third of all people coming in daily contact with a diphtheria patient will pick up and retain the diphtheria bacillus.

Virulence: Diphtheria bacilli have been found to be of virulent type in approximately 50 per cent of these direct contact carriers that we have examined.

Significance: They, therefore, constitute a real menace to this extent and they should be subjected to adequate administrative control.

4. The Remote Contact Carrier is a carrier who has not been in contact with a case but who has probably obtained his organisms from some other carrier.

Number: Many studies on this phase of the subject seem to indicate that about 2 per

* Each month we desire to publish in the LABORATORY NOTES short, original articles, under the author's name, dealing with some phase of applied bacteriology, labor saving devices, modified methods, etc. Contributions should be in the hands of associate editor before the fifteenth of each month.—C. C. YOUNG.

** Received for publication March 7, 1925.

cent of persons who do not know that they have been exposed to diphtheria will be found to be harboring diphtheria bacilli. Tabulated experience of the past five years in this laboratory shows that there is a definite seasonal variation paralleling the incidence of diphtheria in the community. This seasonal variation would be represented by the following table:

January	7%
February	6%
March	5%
April	4%
May	3%
June	2%
July	2%
August	2%
September	2%
October	4%
November	6%
December	8%

Virulence: The organisms from these carriers have been found to be toxin producers in from .1 per cent to 1 per cent of cultures examined.

Significance: Organisms from these remote contact carriers have been found to be non-virulent diphtheria bacilli in such a large proportion of cultures examined that they can all be considered non-virulent so far as the present public health administration is concerned.

All organisms in this study have been examined for size, shape, staining characteristics, and toxin formation. The paragraph headed "Number" records the number of cultures containing organisms that complied with the first three requirements as determined by Westbrook's Types and Loeffler's Stain.

All organisms that met these requirements were further tested for toxin formation by the "mixed culture method" and recorded in the paragraph on "Virulence."—Author's abstract from "Sources of Infection" presented before Interstate Postgraduate Assembly at Milwaukee, October, 1924. Don M. Griswold. M.D., D.P.H., State University of Iowa.

A Comparison of the Schulte-Tigges and Ziehl-Neelsen Methods of Staining Tubercle Bacilli—Of 700 specimens of sputa examined by the Ziehl-Neelsen and Schulte-Tigges methods of staining, 190 were found positive and 510 negative by both methods. In the positive preparations, using Gaffky's scale, there was a total of 4,363 organisms exposed by the Ziehl-Neelsen method and 5,285 or about 10 per cent more by the Schulte-Tigges method. The authors conclude that the Schulte-Tigges method is an apparently reliable staining procedure for tubercle bacilli. They do not consider, however, that the method has sufficient advantage to warrant a change from the Ziehl-Neelsen method.—O. M. Mills and P. L. Kendrick, *Am. Rev. Tub.*, 10:656. (March) 1925. Author's abstract.

Whole-Culture Method of Testing the Virulence of Diphtheria Bacilli—Bull and McKee washed off the growth from a diagnostic culture with salt solution. Suitable suspensions were made, and 0.1 c.c. of this was injected into a guinea pig which had been given antitoxin. The pigs were observed for three days. The cultures which showed necrosis of the skin at the point of injection on the susceptible pig and not on the protected pig were considered to contain virulent diphtheria organisms. Of 198 strains tested, 31 gave positive reactions. Of the 31, 26 gave positive virulence tests in pure cultures. The test, thus checked against the isolation in pure culture method, gave correct results in 84 per cent of instances. The advantages of the test are: (1) from 4 to 6 cultures can be tested on one animal, (2) the rapidity of the test, (3) elimination of isolation in pure culture, (4) results known in from forty-eight to seventy-two hours, and (5) cultures from which it is difficult to isolate the B. diphtheriæ because of the nature of the contaminating organisms can be tested.—T. T. Crooks, *Am. J. Dis. Child.*, 29:371. (March) 1925. H. C. H.

Torula Meningitis—The authors report the first case of torula meningitis in which the diagnosis was made early enough in the illness to afford the opportunity for observing the patient during the entire course of illness lasting five months. A boy aged sixteen was taken ill on May 15. Ten days later he became delirious. Lumbar puncture was performed May 29. At the end of 48 hours there were yeast colonies apparent on glucose veal agar. Subsequent lumbar punctures continued to show yeast cells both in smear and culture. The organisms were identified as torula based upon the following findings: the absence of endospores, the reproduction by budding, the absence of mycelium and the failure to form gas in sugar. The effect upon rabbits and guinea pigs was studied. Various methods

of treatment were tried, apparently with no effect. The authors conclude from their study of the patient and the animals inoculated that infection with torula is usually slow in its course but fatal in outcome.—Shapiro and Neal, *Arch. Neurol. & Psychiat.*, 13:174. (Feb.) 1925. M. C.

Recovery of T. Pallidum from the Spinal Fluid of a Patient with Syphilitic Meningitis of the Neuro-Recurrence Type—The authors report a case of acute syphilitic meningitis occurring in a patient four months after the last treatment for a primary lesion. Three c.c. of his spinal fluid, which was positive to all tests, was inoculated into a rabbit's testicle. About 68 days later the animal developed an orchitis and 14 days later, or 82 days from inoculation, many characteristic specimens of T. pallidum were demonstrated in the affected testicle.—Kemp and Chesney, *Bull. Johns Hopkins Hosp.*, 36:199. (March) 1925. C. C. Y.

The Blood Count in Carcinoma of the Esophagus—In diseases of the esophagus, the most important differential diagnoses to consider are cancer, stricture (inflammatory) and spasm of the esophagus. The difficulty here is that the blood count in all these conditions may be alike, particularly the hemoglobin and red blood cell counts. Apparently, it is not well known that in a new growth of the esophagus the blood count is normal or raised. A high hemoglobin and erythrocyte count, a color index of nearly one, and a slight leukocytosis are the usual findings. In other words, the normal or high count in a neoplasm of the esophagus is the same as in a cardiospasm of functional or inflammatory origin. A normal blood count therefore does not rule out a new growth of the esophagus. In carcinoma of the stomach, a moderate to severe secondary anemia is found. In 26 cases of stomach cancer, the average count was 58 per cent hemoglobin, 3,370,000 red blood cells, color index 0.8, 11,300 white blood cells, 75 per cent polymorphonuclears, 21 per cent lymphocytes and 3 per cent monocytes.—A. M. Master, *Jour. A. M. A.*, 84:734. (March 7) 1925. O. M. M.

Virulence of Old Tubercle Bacillus—A strain of tubercle bacillus cultivated on bacteriological culture medium since its isolation by Trudeau in 1891 gave typical lesions and caused death when inoculated into two guinea pigs. The animals lived for 180 and 704 days respectively.—Rosenberger, *J. Lab. & Clin. Med.*, 10:140. (Nov.) 1924. M. S. M.

Antibody Formation—Rabbits x-rayed in doses sufficient to reduce the amount of their lymphoid tissue without damage to the bone marrow showed a definite deficiency in the production of precipitins, bacterial agglutinins, and protective antibodies. On the other hand, rabbits subjected to exposures of dry heat sufficient to increase the activity of the lymphoid organs, on immunization develop antibodies in larger quantity than do untreated animals immunized by the same process.—Murphy and Sturm, *J. Exper. Med.*, 41:245. (Feb.) 1925. M. S. M.

VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

Mortality in Russia—The first life table for the population of 50 departments of European Russia appeared in 1916. It was based on the Census of 1897 and the deaths of 1896-7 and was calculated by S. Novosel'sky. M. Ptucha of the Ukrainian Academy of Sciences followed his methods in making a table of the nine districts of the Ukraine.

Most striking in both tables is the unusually high infant and child mortality and the low mortality in old age. In European Russia, the mortality among women in the age-groups 0-10, 40-60, 70-80, is less than among men. In the Ukraine, the mortality among females is less in childhood only. The life expectancies in European Russia, the Ukraine, Austria, Germany, Italy, England, France, Sweden and Massachusetts are compared. In Russia, little more than 70 per cent of the boys and 74 per cent of the girls survive the first year. In the Ukraine, the percentages are higher but they are better than the Austrian and in the case of girls better than the German figures. Of the boys in Russia, 55.6 per cent complete the fifth year of life, whereas in Sweden 83 per cent reach this age. For boys, aged 10, the life expectancy in Russia and the Ukraine is less than in other countries with the exception of Austria. It is interesting to observe that for 20-year old males in all countries except Sweden, Italy and Austria the expectancy is about the same. The expectancy after sixty is greater in Russia and the Ukraine than in other countries except Sweden. The smallest differences in expectancy between the sexes at birth are found in Italy, and the Ukraine. Among Italians, the difference is due to the greater female mortality at all ages. Among the Ukrainians, it results from the preponderance of mortality during the productive years.

In European Russia the life expectancy among males at birth was 3.7 years longer in rural communities than in cities and reached a maximum at age 25 with a difference of 5.41 years. The expectancy at birth for females was one year higher in the country than in the city. Comparison of mortality in five districts in which the majority of the population belonged to one nationality showed wide variation especially at the early ages.—M. Ptucha, *Metron*, Vol. 3, No. 3-4, 1924. pp. 472-520.

The Progress of Acute Appendicitis at the Boston City Hospital from 1880 to the Present Day—From the year 1895-1896 when the mortality of cases of acute appendicitis at the Boston City Hospital was 20.7 per cent, the mortality has declined steadily, until it reached the low figure of 3.1 per cent in 1921-1922. On the other hand, the number of cases recognized and treated has been progressively increased. Appendicitis is found at this hospital to be most common in young adults and occurs in males a little more often than in females. It is to be remembered that it may and does occur at all ages. The lowering of mortality is best explained as being due to earlier recognition of the disease and improved methods of treatment. It is only fair to say that the increase in the number of cases is due to improved diagnostic methods as well as to increase in population.—D. J. Duggan, *Bost. M. and S. J.* 192:247-249 (Feb. 5) 1925.

Four Decades of Scarlet Fever—Between 1885 and 1923 there were four distinct changes in the trend of the scarlet fever death rate. Following the establishment of quarantine and isolation measures in the earlier years of this period (1885 to 1896) there occurred a drop of nearly 5 per cent per year in the scarlet fever mortality record of 21 American cities. From 1896 to 1905 no marked upward or downward trend in the death rate was observed. Perhaps this stationary condition resulted from the fact that no new and important control measures for scarlet fever were made available during this period. After 1905, school hygiene and milk control became effective and an average decline of 7.8 per cent per year was recorded up to 1918. Then another halting tendency set in. The slight rise in the

death rate between 1918 and 1923 may indicate that at the present time public health procedures are securing as low a death rate as may be expected with the facilities at hand. When the newly proposed methods based on the work by Drs. Dick, Park, Zingher, Blake and Dochez are introduced on a country-wide basis another period of downward trend may be expected to set in.

Of course, not all of the credit for the declining death rate can be given to public health measures. Over these decades there has been an influx into these cities of large numbers of new race stocks, bringing with them a greater or lesser immunity against the scarlet fever streptococcus and its toxins. It is also possible that this streptococcus and its toxins have undergone changes in capacity to produce disease and death.—*Stat. Bull.*, Met. Life Ins. Co. 6:3-5 (Feb.) 1925.

Vital Statistics for England and Wales, 1924—The provisional birth and mortality rates for England and Wales and London for 1924 have been issued. The birth rate in England and Wales was 18.8, that of London 18.6, and of 105 county boroughs and great towns including London 19.3. The death rate for these areas was 12.2, 12.0 and 12.3, respectively, and the infant mortality 75, 69 and 80, respectively. The birth rate of England and Wales is the lowest recorded except during the war years 1917-1919. The death rate for England and Wales relates to the whole population, but that for London and the groups of towns to the civil population only.—*Brit. M. J.* 1:223 (Jan. 31) 1925.

Health Conditions in Barbados—The effect of constant emigration of the young and vigorous population is being felt in Barbados, the death rate being 37.1 in 1923 and the birth rate 37.4. Deaths are not registered by cause so that the true cause of the high death rate cannot be ascertained. The infant mortality is probably a leading factor, being deplorably high (371 in 1923 as compared with 187 in 1922 and 401 in 1921). Improper feeding is said to be largely responsible for this rate. The number of males between 15 and 20 is about one-half that of females at those ages, a disproportion which cannot fail to have marked social effects. The climatic advantages, however, of Barbados are almost unrivaled. Malaria is unknown and there are no extremes of hot or cold. It is patronized largely as a health resort. The diseases of insanitation are very common—enteric fever and dysentery. There is little other epidemic disease.—*Lancet* 1:161-162 (Jan. 17) 1925.

Higher Death Rates in Rural Districts—Although a boy in a rural community at birth has a life expectancy of seven and three-fourths years more than his urban brother and the country girl may expect to live six years longer than the city girl, for many diseases the rural mortality exceeds the urban. Whooping cough, in direct contrast to measles, scarlet fever and diphtheria, has a higher death rate, year after year, in rural districts than in the cities. No explanation seems satsifactorily to explain this phenomenon. In the case of cancer, the epitheliomata or skin cancers constitute a very interesting exception to what happens with respect to malignant growths in other parts of the body; for these cancers, in direct contrast to all others, show a much higher rural than city death rate. General tuberculosis is the only type of tuberculosis whose death rate runs higher in the rural districts. Deaths from smallpox are more numerous in the country and smaller towns. This is readily explained by the fact that vaccination is more generally practiced in centers of population where city boards of health coöperate actively with state health departments in arousing the interest of the people in vaccination. The mortality from influenza invariably runs higher in the country, in normal as well as in epidemic years. Among diseases of the circulatory system, angina pectoris seems to be the one condition which generally records a higher rural death rate. Among the digestive complaints, the relatively few deaths caused by intestinal parasites occur mostly in rural areas. Among diseases of the genitourinary system, bladder complaints alone register higher rural mortality. Many more city dwellers than rural people commit suicide by taking poison, by inhaling gas, by firearms, cutting instruments and by jumping from high places but more country dwellers by far commit suicide by hanging. Among accidental deaths, food poisonings, deaths in burning buildings, drownings, gunshot wounds, mining and quarry accidents, railroad accidents, deaths in landslides, injuries by animals, fatalities due to excessive cold and lightning are all more numerous in the country.—*Stat. Bull.*, Met. Life Ins. Co., 6:1-3 (Feb.) 1925.

Health Conditions in Hong Kong, 1922—The civil population of Hong Kong in July, 1922, was 662,200 and was distributed as follows: Non-Chinese civil community, 15,200; Chinese population in the city of Victoria (including Peak), 340,000; villages of Hong Kong, 25,700; Kowloon and New Koolon, 133,000; new territories, 84,000; population afloat, 64,300. The total Chinese population was 647,000.

The birth rate for the year was 6.25 per 1,000 among the Chinese community and 22.84 among the non-Chinese community, as compared with 5.68 and 25.88 in 1921. Not more than a portion of the births are registered, however. The death rate for the year was 25.88 among the Chinese and 20.46 among the non-Chinese as compared with 20.29 and 18.08 for 1921. The number of deaths from malaria was 454, from plague 1,071, and from smallpox 189. Pulmonary tuberculosis claimed 1,385 Chinese and 25 non-Chinese victims, while other forms of tuberculosis represent 686 deaths, making the total 2,096, or 14.8 per cent of the total deaths among the community. Beri-beri was responsible for 829 deaths as compared with 526 in 1921, although circulars have been distributed for several years calling attention to the cause of the disease.—*Lancet*, 2:1214-1215 (Dec. 6), 1924.

Health Conditions in Cyprus, 1923—The population of Cyprus is estimated at 322,000. Public health was again good in 1923, except for an epidemic of measles which caused many deaths among children. Stringent quarantine measures prevented the introduction of plague and other diseases from the poor refugees which have been received in large numbers. The prevailing diseases were those of the digestive and respiratory system, influenza, diseases of the skin, rheumatism, malaria and enteric fever. The usual anti-malarial campaign was carried out and the incidence of malaria was less than in 1922. The birth rate was 25.1 as compared with 28.0 in 1922. The deaths in the same period were 17.7 per 1,000 as against 29.0 in 1922, while the infant mortality rate dropped from 167.7 in 1922 to 149.7 in 1923. The year generally was more healthy than 1922. The climate is temperate and healthy, although the excessive heat of the plains is trying to the Europeans in summer.—*Lancet*, 2:1322 (Dec. 20), 1924.

Health Conditions in Pittsburgh, 1924—Both the death rate and the birth rate declined slightly in Pittsburgh in 1924. Deaths occurred at the rate of 15.3 per 1,000 in 1924 as compared with 15.6 in 1923, while the birth rate fell from 25 in 1923 to 23.8 in 1924. If only local residents are included the death rate becomes 13.2. The estimated population for 1924 was 626,015.—*Pittsburgh Gazette*, Pittsburgh, Pa. (Jan. 20) 1925.

Public Health, Gibraltar, 1923—The number of British subjects in Gibraltar at the end of 1923 was estimated at 16,165; in addition some 10,000 aliens and 1,500 British subjects resident in La Linea come into Gibraltar daily. For the fixed population the birth rate was 22.57 and the death rate 17.63. The former was lower than any year since 1917, when it was 22.3, and the latter was lower than any rate for the preceding five years, except 1921 (15.74). Not a case of smallpox was notified during the year. Vaccination is compulsory. There were 19 cases of enteric fever with two deaths. Diphtheria (21 cases and 2 deaths) was more prevalent than in any year of the decennium except 1922. Only 31 cases of measles were reported as compared with 305 and 388 in 1922 and 1921. Tuberculosis deaths were fewer than for any of the past ten years. Influenza prevailed throughout the year and an epidemic of mild scarlet fever appeared for the first time. The infant mortality was high, being 109.5; wasting diseases and diarrhea were the chief causes of death.—*Lancet*, 1:59-60 (Jan. 3), 1925.

Health in the Leeward Islands—The Leeward Islands form the most northerly group of the Lesser Antilles in the West Indies. The colony is now a federation comprising the 5 presidencies of Antigua, St. Christopher, Dominica, Montserrat and the Virgin Islands. According to the 1921 census the population was 122,242. The birth rates range from 33.2 in Anguilla to 39.8 in St. Christopher and Dominica and the death rates range from 18.3 in Anguilla to 33.8 in St. Christopher. The general health of the colony during the year was satisfactory, and although epidemics of alastrim existed in Dominica from July, 1922, to August, 1923, the disease was of a comparatively mild type, only 6 deaths occurring.—*Lancet*, 2:1216 (Dec. 6), 1924.

SANITARY ENGINEERING

ABEL WOLMAN, C.E.

Zoning and Health—One of the primary purposes of zoning is to safeguard the conditions which affect three primary phases of life, namely, work, recreation and sleep, each of which occupies about one-third of the adult's normal day. To obtain normal, healthful conditions in cities, home life must be separated in place from work life. Another object of zoning is to prevent the private monopoly of natural light and air necessary to health, by restricting the height and bulk of buildings in ways appropriate to their neighborhood. Light, air, noise, odors, congestion, and the like, and their effect upon individual health and community health are fully treated in this article. —George C. Whipple, *Proc. A.S.C.E.*, 51:154 (Feb.), 1925. A. W. B.

The **Purpose of Zoning Ordinances and Methods of Administration** — Regulations should be made in accordance with a comprehensive plan and designed to lessen congestion, to promote health and to avoid undue concentration of population. Particular stress is laid on the necessity of starting right and this means: (1) A comprehensive enabling act; (2) careful study and preparation of data; (3) thorough discussion with everyone affected; (4) administration of such ordinances by capable and honest officials; (5) interpretation of special clauses by a competent board of appeals actuated by a sense of justice, fairness and a humanitarian feeling toward those affected. The whole atmosphere of zoning regulations, their inauguration, preparation, administration and interpretation should be one of reasonableness and sanity with no attempt to accomplish a result too far in advance of the general public sentiment.—Morris Knowles, *Proc. A.S.C.E.*, 51:178 (Feb.), 1925. A. W. B.

Height **Limitations in Zoning**—Based on intensive studies in each case, buildings above a fixed height, say 10 stories, should be required to arrange for a widening of the streets by arcades or by setting the buildings back. Such buildings should be required to put in the most adequate fire protection and exit appliances that it is possible to devise, as modern fire departments cannot cope with fires in buildings of over 10 stories. If the streets and lower floors of buildings are to be made disease-breeding canyons, other means must be devised for controlling respiratory diseases, eliminating eye and nerve strain, caused by living in an unnatural environment cut off from sunlight and fresh air.—Jacob L. Crane, *Proc. A.S.C.E.*, 51:194 (Feb.), 1925. A. W. B.

Applying Copper Sulphate to Reservoirs—To overcome trouble from algae growths in the water supply of the Island of Jersey in the British Channel, a quantity of crystals of copper sulphate equal to 0.05 p.p.m. were dissolved in sufficient water to make a solution of 1 pound of sulphate to 5 gallons of water, and, using an ordinary agricultural spraying machine from a boat, the surface of the reservoir was sprayed. The result of this treatment was entirely satisfactory.—Wilfred Rushton and P. A. Audin, *Pub. Works*, 56:55 (Feb.), 1925. A. W. B.

Control of Hookworm Disease—By the use of the Baermann apparatus it was possible to obtain hookworm larvæ from soil cultures in large numbers to carry out experiments on the activities of these larvæ in the soil and to study the distribution of soil infestation in the field. Experiments in Porto Rico and Trinidad indicated that the swallowing of infective hookworm larvæ by chickens and pigs is not a factor in their dissemination. In the human experiments tingling and itching began from seven to ten minutes after the larvæ were placed in contact with the skin. Definite skin lesions were produced by the penetration of the larvæ. It was found that the time required for the development of Necator americanus in an infection with old larvæ was seven weeks, while that with the young larvæ on the same patient was five weeks.—William W. Cort, *Am. J. of Hyg.*, 5:49 (Jan.), 1925. A. W. B.

Area Zoning—Examination of the maximum, minimum, and average density of population per unit of land area in a number of large cities is sufficient evidence that overcrowding of land is not an economic necessity. Zoning for area implies consideration of the entire city structure and its plan. Control of population density, expressed in terms of families per acre, or square feet of lot area per family, is a most desirable form of area zoning. Public health, safety and morality demand certain control of density of population in accordance with the type of building.—Harland Bartholomew, *Proc. A.S.C.E.*, 51:172 (Feb.), 1925. A. W. B.

Housing Density Regulation—The chief purposes of housing density regulations are: The prevention of the development or spread of excessive tenement house congestion; fixing of desirable standards of density for housing development in the unsubdivided areas; grading down of the concentration of the residential population in accordance with economic and social requirements; indirect control of multi-family house construction by area per family requirements; the possibility of accurate estimates of future population and densities in various residence areas as a basis for more accurate forecasting and planning of future needs for all kinds of utilities.—Robert Whitten, *Proc. A.S.C.E.*, 51:207 (Feb.), 1925. A. W. B.

Proposed Filtration Plant, St. Catherines, Ont.—The filter plant is designed for 10,000,000 gallons per day and is to have a filtered water storage reservoir of 5,000,000 gallons capacity. Two liquid chlorine plants will be used to sterilize the water.—*Canad. Eng.*, 48:205 (Feb. 10), 1925. A. W. B.

Identification of the Larvae of the Three Common Anopheline Mosquitoes of the Southern United States—Differentiation of the larvæ is necessary in the intelligent analysis of the malaria problem in a given area. If this specific knowledge is not gained the menace of a swamp to a neighboring community may not be correctly gauged. A total of one thousand larvæ were examined under a microscope. Beginning at the head and proceeding with many abrupt interruptions, to the last segment of the abdomen, each larva was examined in regard to certain characters. Description of mature larvæ of the three common species of Anopheles in southern United States is given. —Paul F. Russell, *Am. J. of Hyg.*, 5:149 (Mar.), 1925. A. W. B.

Relation of Zoning to the Design of Drainage and Sewerage—Zoning if begun in time may prevent low lying land, subject to floods or troubled with high ground-water, from being occupied in a way that requires drainage, thus obviating sewers on excessively flat grades and in many cases also pumping. The design of a sewerage system in a community that has been zoned and which has an effectively administered zoning ordinance, may be made with greater certainty and economy. The adoption of zoning ordinances means better sewerage for less money.—Paul Hansen, *Proc. A.S.C.E.*, 51:220 (Feb.), 1925. A. W. B.

Utilization of Solar Light and Heat in the Treatment of Night Soil—The sunlight and heat for the treatment of night soil in tropical and sub-tropical countries is suggested as a result of experiments carried out in Siam. Night soil containing hookworm ova and larvæ placed in insulated boxes having a double glass cover was exposed to sunlight. After a one-hour exposure an examination showed all larvæ to be dead. Temperatures attained within these boxes under favorable conditions greatly exceed the thermal death points of ova and larvæ of hookworms, and the maximum temperatures which have been attained exceed the thermal death points of all vegetative forms of ordinary bacteria.—M. E. Barnes, *Am. J. of Hyg.*, 5:202 (Mar.), 1925. A. W. B.

Zoning and Water Supply—If the plan of a city indicates its business, industrial and residential sections, a water system may be designed at a considerable saving in first cost and in future reinforcement of the system. In preparing a zoning plan the water supply must be given due weight as it is possible to destroy an existing source of supply and burden the city with a cost for new works out of proportion to the benefits resulting from zoning. In the adequate provision of water there are various degrees of aid that can be obtained through proper zoning.—H. Malcolm Pirnie, *Proc. A.S.C.E.*, 51:258 (Feb.), 1925. A. W. B.

INDUSTRIAL HYGIENE

DRS. E. R. HAYHURST AND N. C. DYSART

Lead Poisoning from Dry Sanding of Automobile Bodies—Sixty-seven men from one company who had dry-sandpapered the undercoats of lead paint on automobile bodies were admitted to the Detroit Receiving Hospital during the period from May, 1921, to February, 1924, poisoned by lead. Forty-five of these cases entered the hospital in 1922. Most of the men had worked in a place where an overhead hood connected with air exhaust had drawn the lead dust upward past the men's faces. It was found on investigation that the men had not worn respirators, but most of them had had about three thicknesses of cheesecloth tied around their heads to cover, or partially cover, their nostrils and mouths. A piece of this cheesecloth after it had been worn for one workday by a sander was found to contain 81 mg. of metallic lead. After a waterproof sandpaper which permitted water to be applied to the lead painted body by means of a sponge was substituted for dry sandpaper, the incidence of lead poisoning was practically negligible.

The hospital history data for the first 38 men admitted were analyzed. Six of the men were entered at the hospital within three weeks of the date of their employment as sanders and 24 were admitted within eight weeks. Colic, which occurred in 90 per cent of the 38 men, was the principal complaint. Constipation was marked in 63 per cent of the cases. Hemoglobin values were low. About 2,000 men were hired in a year to keep 100 men on the day shift sandpapering and another 100 men on the night shift.

In the case of another large company in the Detroit region which employed the dry sanding method and which had ventilating equipment providing a strong draft *downward* through the openwork floor of the workroom, no hospital cases of lead poisoning were reported among the sanders. In Ohio one large establishment reported 104 cases of lead poisoning during 1922 but before the end of the year adopted wet sanding methods and no further cases of lead poisoning had been reported from this company during the first five months of 1923.—A. S. Dean, *J. Indus. Hyg.*, 6, No. 6, 245 (Oct.), 1924.

Fur Dermatitis—The British Ministry of Health has published a report by Dr. A. C. Parsons on the epidemic of fur dermatitis in England in 1922-1923. About 1,000 cases occurred during the first months of 1923. Dyed rabbit fur, known as "beaver coney," was found responsible for the outbreak, the dye and not the hair being the offending agent. Although German, French, Belgian and American importations were blamed, English furs were not altogether absolved. Dr. Parsons believes that personal idiosyncrasy is not of paramount importance. The deeper the shade produced the less likely is that particular dye to cause irritation. Both depth of color and harmlessness to the human skin increase with each progressive stage in the oxidation of the dye. Previous to the 1922-1923 epidemic only sporadic cases were reported, and the incidence was considerably diminished in the winter of 1923-1924. Complaints of the dermatitis were also made in France and Germany. In an appendix to the report the statement of Dr. Castle is repeated that the coloring agent appears to dissolve in the fatty acids associated with a greasy skin.—Ed., *Brit. M. J.*, No. 3324, 473 (Sept. 13), 1924.

Wood Turpentine—It is claimed that recent advances in the manufacture of steam-distilled wood turpentine have eliminated the objectionable odor occasionally noticed when working with the early forms of wood turpentine. The new product is claimed to have a mild, pleasant smell and to be free from harmful vapors. It is said that the provision of unusual ventilation is unnecessary when painting with the new turpentine and that residents of homes in which the product is used do not complain of lasting fumes as the

* The editors of this Section will gladly receive contributions from members. Please address all material to Hartman-Ohio Bldg., Columbus, Ohio.

process turpentine evaporates completely and rapidly from painted surfaces. It is believed to be unusually efficient in exterior work where penetration and hardness for the finishing coat are required. Inasmuch as the supply of gum spirits of turpentine is supposed to be insufficient to last longer than the next ten years, improvements in the manufacture of wood turpentine are of vital importance.—Ed., *Painter and Decorator*, 38, No. 12, 556 (Dec.), 1924.

Wet Grinding—After making studies of dry and wet grinding processes, W. H. Drury concludes that the assumption of the comparative harmlessness of wet grinding is not altogether justified. In the grinding room of an axe factory where wet grinding was done on natural sandstone the tuberculosis rate was 19.0 per 1,000 as compared with 1.6 per 1,000 for the rest of the working staff. On the other hand it was pointed out that wet grinding on *manufactured* wheels is comparatively harmless because of the small amount of dust evolved. While a wet process is less dangerous than a dry one, other things being equal, we have overestimated the protection afforded by moist processes and have underestimated the hazards involved in the use of natural sandstone wheels, which are very friable and contribute a large amount of dust to the atmosphere, unless great care is taken in their operation.—Ed., *Nation's Health*, 7, No. 1, 38, (Jan.), 1925.

Health Hazards of Mining—The principal health hazards in the coal mines of the United States are due to abnormal conditions of the air, as the presence of carbon monoxide, hydrogen sulphide, and increased carbon dioxide, oxygen deficiency, high temperatures and humidities, and possible hazards due to breathing dusts. Abnormal conditions of the air may be due either to physical or chemical changes. The physical changes are (1) abnormal temperature, (2) abnormal humidity, (3) air movement, and (4) presence of dusts. Dusts may be either poisonous, as salts of lead, arsenic, zinc, or mercury; or nonpoisonous, as dust from coal, silica or quartz, limestone, gypsum, or silicates. Chemical changes may be due to changes in the normal constituents, as lowered oxygen or increased carbon dioxide; or to the addition of abnormal constituents, as carbon monoxide (white damp), hydrogen sulphide (stink damp), sulphur dioxide, methane (marsh gas, fire damp), hydrogen and nitrogen.

Hazards of impure drinking water are discussed and methods for obtaining a safe supply are summarized as are methods of mine sewage disposal.

Miners' nystagmus has not been reported in this country and probably does not exist due to the better illumination found in American coal mines. Beat knee, beat hand, and beat elbow are important hazards in the mines of Great Britain, but cannot be considered so, excepting in very limited areas, in the United States, due to the fact that the coal seams being worked are usually not inclined and also that undercutting by machine is almost universal.—R. R. Sayers, *Rep. Invest.*, U. S. Bureau of Mines, Serial 2260 (Dec.), 1924.

Factory Illumination—As the cost of proper illumination forms but a small proportion of the cost of labor, in many cases only about 1 per cent, employers should regard good illumination as a wise investment. The subjects of glare, intensity, and the relation of lighting to industrial fatigue are considered by the author. A study of the comparative merits of natural and artificial lighting is of benefit. At its best, good natural lighting is doubtless the best light of all by which to work, and recent researches undertaken by the Industrial Fatigue Research Board in England led to the conclusion that in mills devoted to silk weaving the average production by very good daylight was 10 per cent greater than by artificial light; this was corroborated by experience in mills devoted to other textile processes. On the other hand, artificial light is under much better control than daylight, which varies so greatly with the time of day, season of the year, and climatic conditions. It is quite possible that if our artificial lighting were sufficiently well designed, the results would be as good as by average daylight, and possibly even better.—L. Gaster, *J. State Med.*, 32, No. 12, 574 (Dec.), 1924.

Tar Cancer in Europe—While tar cancer is extremely rare in France it is relatively frequent in England. Of about 2,500 men employed in the briquette industry in England 49, or 2 per cent were found to be affected with suspicious ulcerations requiring surgical attention. Pitch is much more dangerous than tar, and it is especially in the manufacture of briquettes with pitch dust that cases of

cancer are observed. Ross and Cropper, in 1913, established also: (1) Pitch from gas tar is injurious, but not that from coke oven tar; (2) distillation of gas tar at 300° produces a harmless pitch (soft pitch); (3) anthracene oil is not as injurious as crude commercial anthracene. In the twenty-three years that tar from coke furnaces has been distilled, no case of tar cancer has been noticed among the workers.

The prophylactic measures recommended provide: (a) that pitch workers wear goggles; (b) that they work in the open air, with a diminution of pitch dust; (c) have suitable clothing, frequently washed, and (d) immediate attention for burns or other accidents.—P. Courmont, *J. State Med.*, 32, No. 11, 539 (Nov.), 1924.

Baker's **Dermatitis**—Dr. Allan C. Parsons of the British Ministry of Health, after a careful investigation into the subject of bakers' itch, believes that probably not more than half of the cases reported among bakers were cases of bakers' dermatitis. In this inquiry information was sought from bakers, millers and caterers, and from the dermatological clinics throughout the country (England). Flour itself and processes used in its refinement were absolved from blame because no cases of dermatitis were reported among millers. Evidence would indicate that in most *bonâ fide* cases of bakers' itch the eruption is usually caused by the mechanical irritation of the dough. Sugar was a possible contributory cause in a certain proportion of cases and "cream powder" and salt were responsible for a few isolated cases. The eruption is usually limited to those parts which come in contact with dough. The affection starts with a sensation of itching which is followed by a vesicular erythema, and in untreated cases a general folliculitis supervenes sooner or later. Assuming that manual contact with dough is the usual cause of the trouble we may look for a diminished incidence with the utilization of machinery in bakeries.—A. C. Parsons, *Brit. M. J.*, No. 3324, 464 (Sept. 13), 1924.

Lead **Poisoning in Rubber Working Industries**—In a rubber working plant the workmen in the compounding room, where one of the processes consisted of mixing litharge and petrolatum in preparation for milling, were frequently subjected to a considerable amount of lead dust. In order to eliminate the hazard the process of mixing the ingredients was removed to a point where only one worker was in contact with the dust. Only after the "s.lve" had been so prepared was it brought into the compounding room and added to the "batch."—L. Greenburg, *Pub. Health Rep.*, 39, No. 26:1567 (June 27), 1924.

Illumination and Painting of the Workplace—After a careful investigation of thousands of industrial accidents R. E. Simpson, of the Travelers Insurance Company, attributes 18 per cent of them to bad lighting. Good lighting results in: (1) reduction of accidents; (2) greater accuracy in workmanship; (3) decreased spoilage of product; (4) increased production for the same labor cost; (5) less eye strain; (6) better working conditions; (7) less labor turnover; (8) better order, cleanliness, and neatness in the plant and (9) easier supervision of the men. Illumination from an indirect lighting system may be multiplied several times by refinishing a dirty ceiling with a good white paint, and even in case of direct lighting the interior finish is a large factor. Light reflected by white walls also illuminates shadows. Parts of shop machinery may be frequently painted white in order to improve the lighting at the point of work. As the color of the portions of the wall near the floor has no material effect upon either the color quality or the amount of illumination the lower sections of the walls can be finished in some darker color to improve the appearance and at the same time to avoid the sunshine glare on a white surface. The "semi-mat" or eggshell finish is usually to be preferred as it largely combines the advantages of both glossy and mat paints in that it is sufficiently smooth so that dirt is not readily collected, is easily cleaned, and at the same time specular reflections are not apparent.—W. Sturrock, *Nation's Health*, 6, No. 8:525 (Aug.), 1924.

Notice of Service to Readers and Investigators—The Hospital Library and Service Bureau, 22 E. Ontario St., Chicago, announces that for the use of hospital and public health workers it issues bibliographies including such items as articles dealing with industrial dispensaries, eight-hour day, equipment, heating, lighting and ventilating of hospitals, industrial hospitals, occupational therapy for industrial workers, etc.

Special Articles on Resuscitation—The Sept. 6, 1924, issue of the *Journal of the A. M. A.* contains the following papers as well as discussions: *Resuscitation After Electrical Shock*, by Wills Maclachlan; *Resuscitation from Carbon Monoxid Asphyxia, from Ether or Alcohol Intoxication, and from Respiratory Failure Due to Other Causes*, by Yandell Henderson; *Artificial Respiration in Electric Shock and Gas Poisoning*, by Cecil K. Drinker.

The Carbon Monoxide Self-Rescuer—"Carbon monoxide self-rescuers," or simply "self-rescuers," are pocket-size gas respirators which protect the wearer from air contaminated with poisonous carbon monoxide gas. On March 6, 1924, the Bureau of Mines approved the "M. S. A. self-rescuer," manufactured by the Mine Safety Appliances Co., Pittsburgh, Pa., after it had passed all the tests and requirements of the Bureau's Schedule 14A'.

The purpose of the self-rescuer is to help miners to escape from mines in which fires are burning or explosions have occurred, by providing protection from carbon monoxide for at least one-half hour. The self-rescuer can be used similarly by workers above ground who may through accident become surrounded or entrapped by atmospheres containing carbon monoxide. This paper describes the construction and details of the M. S. A. self-rescuer as approved by the Bureau of Mines, and discusses its performance under test conditions.—Fieldner, Katz, and Reynolds, *Rep. Invest.*, U. S. Bur. of Mines, Serial No. 2591, April, 1924.

The Municipal Health Department in Its Relation to Industrial Health and Welfare—Unless called for by the Inspector of Factories, the medical officer of health does not go into the factory except to inspect certain questions of sanitary accommodation. Factory welfare organization has spread, especially in America. The activities on the municipal side are limited with us by the staff available. The work is approached not merely by way of the Factory Act provisions, for it must be kept in mind that the health of the employed and their environment is of about equal importance to that of the home, but also through other channels. There are inquiries arising from infectious diseases, complaints of nuisances, approval of plans for new premises, sanitary accommodations, employment of minors, employment of women, intimations from the factory inspector, inspections of canteen (lunch room) arrangements, etc. Within London, factory firms employing more than 5,000 workers do not exceed five; those employing from 1,000 to 5,000, ten to twelve, while the majority employ between 250 and 600. Some firms are emulating the American welfare efforts along such lines as athletics, encouragement of hobbies such as vegetable gardens, home-made articles, social and educational features, canteens, first aid, rest rooms, etc. In regard to the efficiency of the H. M. factory inspectors, in reply to a recent question in parliament the Home Secretary said he was far from satisfied. They were numerically quite inadequate: 205 to supervise 83,542 factories and workshops, *i.e.*, over 1,300 factories to each inspector. The Report of the Departmental Committee appointed by the Home Office recently issued reveals that the medical side is far from satisfactory. Factory hygiene is thus retarded. The factory surgeon lacks the opportunity of having "health outlook." Coördination with the school medical service and other public health services of the country is not provided for. The committee is recommending such coöperation. Until fresh legislation improves the standard of factory life, much can be done by whole-time welfare workers, and by the coöperation and advice of the municipal health department.—G. C. Trotter, *J. State Med.*, 32, 9:401 (Sept.), 1924.

FOOD AND DRUGS

HARRY W. REDFIELD, PH.D.*

The Latest Anent Fowl Pest—The most recent and highly interesting information regarding this scourge of poultry comes to us in the March 11 issue of The Official Record of the United States Department of Agriculture.

"The probability that the outbreak of the European fowl pest last December among poultry in certain eastern states was the result of the introduction of virus from Europe by a well-meaning scientist working in filterable viruses, has been suggested by Dr. J. R. Mohler, chief of the Bureau of Animal Industry. Dr. Mohler said there is a possibility of some other source of infection, but emphasized the fact that the only known introduction of the virus of this disease was made in this manner. The fact that practically all of the cases of European fowl pest have been found in or traced to states in or near where this virus was used is the basis for reasonable suspicion that this was the source of the outbreak.

"The introduction of virus was made from the Pasteur Institute of France by an American investigator in the summer of 1923. About a year ago this man gave some of it to an investigator in another university in the East and later a second sample was distributed. It also has been brought out that an assistant to the man who introduced the virus from Europe took some of it with him to his father's home last summer and inoculated chickens in order to maintain a supply of live virus for continuing investigational work in the fall. He inoculated chickens in June, July, August and September. It has also been learned, said Dr. Mohler, that a firm of poultry dealers in New York City has regularly purchased poultry from at least one of the institutions carrying on investigations with this highly contagious disease. Another fact bearing on this case is that one of the men studying European fowl pest sent virus to another institution in a clean state for use in producing lesions in chickens for the purpose of subsequently illustrating a lecture on the disease.

"The fact that all the evidence thus far available shows that the disease first appeared in the eastern states indicates the unreasonableness of the embargoes placed in the East against states far removed from infected areas. In some cases embargoes have been placed against states 1,500 miles from infected districts.

"In connection with this case, it is important to know that the department, in its efforts to protect the animal industry of the country, does not permit the importation of animals from countries having destructive animal diseases not present here. It is also against the policy of the department to experiment in this country with such diseases. No experimental work has been carried on with foot-and-mouth disease because of the great danger to the American live-stock industry. Some other states have regulations against experimenting with such diseases and notably the state into which the original introduction of this virus was made. Congress recently provided in the general deficiency bill $75,000 for the use of the Bureau of Animal Industry in carrying on such investigations in Europe where foot-and-mouth disease exists at all times.

"'We can only surmise,' said Dr. Mohler, 'what losses we have escaped through the consistent enforcement of our rigid quarantine regulations. Furthermore, it seems from past experience in this and other countries that the place to study dangerous foreign pests and diseases is in the countries where they exist and not in laboratories here where there is a potential danger that they may escape to do great damage to our animal industry.'"

Copper Poisoning—Dr. Frank Burr Mallory of the Boston City Hospital has announced that copper in foods prepared in copper ves-

*Address publications and correspondence to 641 Washington Street, New York City.

sels, or colored green with copper salts, such as peas, beans, squash and pickles, as well as copper dissolved from the worm of the still in making liquor, is the cause of the disease popularly called "hardening of the liver." Chronic copper poisoning is a more common disease than has been thought, he says, for in 3.4 per cent of a large group of post-mortem examinations he has found evidence of its presence. Copper starts its action by causing the red coloring matter of the blood to decompose, forming a yellow pigment. This condition Dr. Mallory calls "Hemachromatosis." The yellow pigment accumulates first in the liver, but as this organ becomes overloaded it appears also in the pancreas, kidneys, lymph nodes, heart, thyroid and adrenal glands and the skin of the extremities. In the liver the cells containing the pigment sicken and die. New cells grow but the tissue thus formed is more like a tumorous growth than healthy liver cells. Hardening of the liver follows. Accumulation of the pigment in the pancreas causes a breaking down of the tissue, followed by diabetes. When the adrenal cortex is attacked, abnormal darkening of the skin follows. Copper poisoning is always slow in showing its effects. "Clinical cases show that ordinarily it takes fifteen to twenty-five or more years to produce the symptom complex."

"Now that the danger of poisoning has been pointed out, steps should be taken to prevent copper from getting into liquors and foods, and to protect workers in occupations involving copper from inhaling or ingesting copper dust," is the conclusion which Dr. Mallory draws.

Shellfish and Typhoid Fever — In the *Weekly Bulletin* of the Department of Health of New York City, dated March 21, Dr. L. I. Harris is credited with these comments regarding the last quarter of 1924: "A total of 798 cases of typhoid fever were reported during this period, as compared with 235 in the corresponding period of last year. It is significant that 111 of the cases reported in this quarter were residents of New York City, who contracted the disease while out of town, and that 55 cases were nonresidents, who were brought into the city for hospital care or who acquired their infection before they arrived here. In seventy-five per cent of the cases the diagnoses were confirmed by laboratory evidence of the presence of typhoid bacilli in the blood or stool. There were 83 deaths reported during this period. In other words, the case fatality rate was 10.4 per cent.

In 57 per cent of the cases, the source of infection was definitely determined. This is a somewhat higher percentage than in the corresponding period of last year, when the source of infection was traced in 49 per cent.

It is exceedingly interesting to note, that we had only 11 secondary cases, out of a total of 798 cases reported. This would seem to indicate that the supervision of the cases and the coöperation of private physicians and the families, were, on the whole, very satisfactory. Seven of the cases were traced to infection from contact with a chronic carrier. Four hundred and twenty-seven (427) cases were traced to contaminated oysters or clams."

While it is understood that an elaborate program for the discussion of the protection of shellfish from possible contamination is being arranged for the St. Louis meeting of the American Public Health Association in the fall, the urge for a short editorial comment on the matter cannot be resisted. The official control of oysters in the past has been based, with apparent good reason, upon insisting that the sanitary surroundings of the beds were good and that the shell liquor showed only small numbers of B. coli per c.c. Assuming that the findings of the New York City Department of Health, the Chicago Department of Health and the United States Public Health Service are accurate and that the high incidence of typhoid fever in New York and Chicago during the past winter was not only due to oysters but was due to oysters from a particular locality, West Sayville, Long Island, the sanitary picture at West Sayville is nevertheless considered, by most persons who are in a position to judge, to be as good as for any oyster grounds in the country. It is said that the B. coli score of the shell liquor of these oysters is almost invariably low. These facts would indicate that something in addition to the control measures of the past must be applied, but what is this something? The experience with milk seems to point to the answer. Raw milk has been found to cause epidemics even when surrounded by every known precaution in production and handling, as in the production of certified milk. At the Detroit meeting of the American Public Health Association in 1924, at a general session, a resolution was adopted "that this Association go on record as endorsing the pasteurization

of milk supplies for human consumption." By reason of the very conditions under which they grow, in bays and estuaries which are fed by streams which may at any time receive pollution, the chance of raw oysters, even under the best existing conditions, becoming infected is obviously greater than is the case with raw milk. Oyster gatherers cannot pasteurize oysters but they can treat them by the method developed by William F. Wells of the New York State Conservation Commission, in a weak chlorine bath. During such treatment the mud on the shells will be washed off and sterilized in great part, at least, and, moreover, the oysters will have a chance to sterilize their shell liquor and their intestinal tracts by drinking the chlorine solution. The flavor of the oyster is not affected and the procedure is quite analogous to the chlorine treatment of water supplies. The solution of the problem seems to be the growing of oysters under the best sanitary conditions which are possible, followed by chlorine treatment which is as adequately supervised as is the pasteurization of milk or the chlorination of drinking water supplies under present conditions.

Coffee—In these days of unrestrained indulgence, when we are importing about 1,300,000,000 pounds of coffee annually or almost a quarter of a pound a week for every man, woman and child in the country, it is somewhat encouraging to note that Helen Louise Johnson on behalf of the Joint Coffee Trade Publicity Committee has prepared a folder on "Scientific Coffee Brewing" in which an effort is made to acquaint the home economists with the results of the three years of investigation on coffee conducted by the Department of Biology and Public Health of the Massachusetts Institute of Technology and to instruct them in the newer knowledge of coffee brewing so that less digestive disturbance (page 34) will follow its consumption. Simmered down to the ultimate, these instructions seem to be: Buy freshly roasted coffee in the bean; grind it fine just before use; infuse at 185° to 195° F. (not higher) for not over two minutes in a glass or porcelain container (throw away the metal contraptions such as aluminum percolators and silver urns), and filter immediately from the grounds. It is believed that copies of the pamphlet may be secured by addressing Joint Coffee Trade Publicity Committee, 64 Water St., New York City.

PRESS ITEMS

Acidophilus Milk—The *New York Times* on March 12 published an interview with Professor Leo F. Rettger of Yale in which he is credited with saying that the development of B. acidophilus in milk has reached the stage, after about ten years of experimenting, where cultures are being distributed throughout the country. He explained that this organism when properly cultured in milk, upon entering the stomach, expels all other bacilli and has been very successful in tests as a remedy for intestinal ailments. A study of the intestinal flora of white rats and of man showed that the presence of dextrin or lactose in the alimentary tract greatly assisted B. acidophilus in gaining the ascendency and excluding all other organisms. As cow's milk contains about 5 per cent of lactose, the perfecting of acidophilus milk was undertaken. In this milk, the casein appears to be predigested and to be precipitated in such a form that it is tolerated by even the weakest stomach. Dr. Rettger is reported as having said "Our results with patients having various forms of intestinal troubles, including colitis, were gratifying—in fact, so gratifying that we prefer not to give them out at the present time."

New Anti-Fat Remedy—From Vienna comes the statement by Professor Hans Eppinger that bad cases of obesity have been cured with novasurol, a mercury preparation, which was originally used for venereal diseases, then for complaints of the kidneys, heart and liver, and finally for dropsy and gout. The explanation offered for the weight reducing properties of this panacea, which is said to produce lasting results without injury to kidneys and heart, is that it has stronger diuretic qualities than any other known preparation, and it is, therefore, thought that it frees the water and salt in the human body from their combinations with the various organs and drains the body. The explanation is ingenious even though we may not be much impressed by it.

Dyestuff Therapy—On March 26, the *New York Herald-Tribune* asserted that a new chapter in the treatment of peritonitis—the conquest of blood poisoning by use of dyes—was being written through the work of Dr. John W. Churchman, of the staff of the Loomis Laboratory and associate in hygiene at the Cornell Medical School. The inhibitory or

bacteriostatic action of dyes is said to be their most striking characteristic setting them off from other antiseptics in a class by themselves, since, even in very weak dilutions, one to one million, they may prevent the growth of organisms usually thought to be quite resistant —like the spore-bearing aerobes. The dyes are selective in their action and different ones are used in the treatment of infected throats, middle ear diseases, suppurating joints, infected wounds, pyorrhea and septicemia. (Dr. Churchman was on the program at the spring meeting in Baltimore of the American Chemical Society to report on his work in dye therapy in a symposium on "Chemistry in the Field of Microbiology.")

ABSTRACTS

Vitamins—I. The Vitamin Content of Honey—Three samples of honey were tested for the presence of vitamins A, B and C by appropriate feeding experiments in which 3 gm. of the honey was served as the sole source of the vitamin in question. As judged by the limited amount of evidence (three rats being used for each test), none of the samples contained any of the three vitamins.—A. Scheunert, M. Schieblich and E. Schwanebeck.

II. The Synthesis of Vitamin B by Intestinal Bacteria—In this further study of the possible synthesis of vitamin B by intestinal bacteria, Bacillus vulgatus, an organism found in the intestines of Herbivora, was grown on a synthetic vitamin-free medium and fed in the dried state as the sole source of vitamin B to pigeons in a state of nutritive decline on a vitamin-free diet. The prompt increase in body weight and elevation of temperature to normal are thought to indicate that B. vulgatus has the property of synthesizing vitamin B.—A. Scheunert and M. Schieblich, *Biochem. Ztschr.*, 139, Nos. 1–3, pp. 47–65, figs. 5 (1923).

A-Vitamin-Content of Indian Foodstuffs—Foods in common use in the East Indies were tested for their value as sources of proteins and vitamin A by being fed to rats as supplements to a diet of polished rice.

Materials recommended as best fitted to supplement the deficiencies of rice in vitamin A are bananas, fresh or boiled vegetables, and ducks' eggs. It is estimated that the use of one banana daily is sufficient to prevent symptoms of vitamin A deficiency on a diet consisting chiefly of rice.—B. C. P. Jansen and W. F. Donath, *Meded. Bergerl. Geneesk, Dienst Nederland. Indie*, No. 1, pp. 46–98, figs. 19 (1924).

Effect of Heat on Yeast—It was found that temperatures as low as 40° C. decreased the reducing power of yeast, but at none of the temperatures tested, which did not exceed 100°, was there any loss of antineuritic properties.—W. R. Hess and K. Rohr, *Ztschr. f. physiol. Chem.*, 129, Nos. 4–6, pp. 268–283, figs. 2 (1923).

Ultraviolet Light and Anemia—Data are reported on the number of red blood cells, percentage of hemoglobin, and color index of the blood of four pigeons fed polished rice, (1) three weeks after the feeding of polished rice, (2) the same pigeons after a 15-minute treatment for 6 days with ultraviolet light, (3) the same after the seventh treatment, and (4) 24 hours after the seventh treatment. The numbers of red blood cells of the four groups were 3,991,000, 4,190,300, 3,962,000 and 4,123,000. These results are thought to indicate that ultraviolet light checks the progress of anemia resulting from vitamin deficiency.—P. M. Suski, *Biochem. Ztschr.*, 130, Nos. 1-3, pp. 258–260 (1923).

BIBLIOGRAPHY

Osborne, T. B., and Mendel, L. B. Continuation and Extension of Work on Vegetable Proteins. Carnegie Inst. Wash. Yearbook, 22, pp. 340–346 (1923).

Laufberger, W., and Sefcik, J. A. The Stimulating Action of Food on Intermediary Metabolism, I (trans. title). *Biochem. Ztschr.*, 145, No. 3–4, pp. 274–278 (1924).

Rohr, K. Comparative Tests on the Respiratory Capacity of Various Tissues and Their Content of Vitamin B (trans. title). *Ztschr. f. physiol. Chem.*, 129, No. 4–6, pp. 248–267, figs. 2 (1923).

Boas, M. A., and Chick, H. The Influence of Diet and Management of the Cow Upon the Deposition of Calcium in Rats Receiving a Daily Ration of the Milk in Their Diet. *Biochem. Jour.*, 18, No. 2, pp. 433–447, figs. 3 (1924).

Hirabayashi, N. Contribution to the Nitrogen and Mineral Metabolism in Avitaminosis (trans. title). *Biochem. Ztschr.*, 145, No. 1–2, pp. 18–31, fig. 1 (1924).

Collazo, J. A. Experiments on Nitrogen Metabolism in Avitaminosis (trans. title). *Biochem. Ztschr.*, 145, No. 5–6, pp. 436–441 (1924).

Asada, K. The Effect of a One-Sided Diet on Avitaminosis and the Behavior of the Body Temperature in This Condition (trans. title). *Biochem. Ztschr.*, 139, No. 1–3, pp. 234–252, fig. 1 (1923).

Randoin, L., and Simonnet, H. Experimental Researches Relative to the Mechanism of the Production of the Symptoms Characteristic of a Disease of Unbalanced Nutrition, Avian Polyneuritis (trans. title). *Bul. Soc. Sci. Hyg. Aliment.*, 12, No. 2, pp. 86–112, figs. 11 (1924).

McCarrison, R. Pathogenesis of Deficiency Disease. XVII, The Relation of Faulty Nutrition to the Development of Epithelioma Contagiosum. *Indian J. M. Res.*, 11, No. 4, pp. 1119–1130, pls. 3 (1924).

CHILD HYGIENE

TALIAFERRO CLARK

Teaching **Health in High Schools**—A law passed by the Iowa legislature to be effective beginning September 1, 1924, requires the teaching of health in every grade to every pupil of the state for at least fifty minutes each week. For the purpose of helping "the high schools of the state realize how important health instruction is and to indicate that such instruction can be woven into all the work of the school," the University of Iowa has prepared a special bulletin which should be of value to all of those in other states who are interested in this problem. The underlying idea of the bulletin is made clear in the first two short chapters. "Whenever it is possible to add to the curriculum subjects dealing exclusively with health work, such addition should by all means be made."

It is stated that the purpose of a course in hygiene, anatomy or physiology is to impart knowledge of the bodily functions and the essentials of personal hygiene and public health, to establish conscious and unconscious habits of thought which will govern the habitual conservation of personal strength and health and the details of personal association with others and with the country at large, and also to familiarize individuals with modern methods of securing and conserving health.

In physiology, anatomy, hygiene, sanitation, or any other title under which the direct health work is to come, the teaching will all be for one purpose. If the work is left to come through other subjects alone it may never be done, with the additional drawback that students will gather the impression health is not of much importance if the teaching of it must be farmed out to teachers of other subjects. "Health instruction should never be allowed to stop at the door of health classes. Along with the direct teaching of health the subjects specially designed for that purpose should show the indirect teaching of it through other subjects." This bulletin is an interesting and instructive presentation of the incorporation of health instruction with instruction in other subjects in the curriculum in such manner as to contribute toward the health education of the students.—Teaching Health in High School, *Bulletin No. 116, College of Education Series No. 7* (Jan. 1), 1925.

Indiana Maternal and Infant Mortality Rates for the Year 1924—It has long been known that cyclic variations occur in the mortality caused by a number of diseases. It is not so well known that similar variations may be observed in infant mortality. So many causes affect infant mortality that it is impossible to predict whether or not the rate in any one year will be lower than the rate in the preceding year. This variation is strikingly shown in a recent report on the infant mortality in the state of Indiana for the year 1924.

Beginning with 109 deaths under one year out of each 1,000 births in 1910, there were, in 1924, sixty-five deaths out of each 1,000 births. This reduction is not uniform through the years, but an average of each of three five-year periods shows a uniform reduction.

The reduction in maternal mortality was not so great. A study of causes shows that, while there has been a slight reduction in the number of deaths from puerperal septicemia, much remains to be done. However, the 1924 maternal mortality rate, 5.40 per 1,000 live births, is the lowest ever recorded in Indiana. During the quinquenniums 1910–1914, 1915–1919, and 1920–1924, the rates from puerperal causes were 7.70, 7.04 and 6.24, respectively.—*Monthly Bull. Indiana State Board of Health*, Feb. 3, 1925.

Results of the Early Administration of Diphtheria Antitoxin—Records of the Philadelphia Hospital extending over a nine-year period reveal the fact that not a single case of diphtheria was fatal in that hospital when antitoxin was administered the first day. This emphasizes the importance in suspicious cases of not waiting for laboratory reports on cultures before giving antitoxin.

Cases Treated	Day of disease on which antitoxin was given	Deaths	Per centage of deaths
235	First day	0	0
1,441	Second day	62	4.3
1,600	Third day	178	11.12
1,276	Fourth day	220	17.24
1,645	Fifth day or later...	308	18.71

—*Nation's Health*, Feb. 15, 1925.

Infant Mortality in New York State, Exclusive of New York City—The infant mortality rate for 1924 was 71 per 1,000 living births, the lowest ever reached for the rest of the state. This represents 8 infant deaths less in 1,000 living births than the record of 1923, and 12 less than the five-year average for 1919–1923.

Deaths under one year of age from important causes decreased except those due to malformations and injury at birth. The deaths from malformations increased from an average of 753 for the four-year period 1920–1923 to 756 in 1924, and injuries at birth caused 755 deaths in 1924 as compared with an average of 623—an increase of 12.2 per cent.

Deaths of infants under one month of age constituted 58.6 per cent of the total deaths under one year as compared with the average of 54 per cent for the period 1920–1923.—*Health News*, New York State Dept. of Health, March 16, 1925.

Being a Baby a Safe Occupation in Chicago—The infant death rate under one year of age for the year 1924 is the lowest ever recorded in the city of Chicago—76.9 per 1,000 live births. The best previous record was in 1922—85.5 per 1,000 live births.

The year 1924 also marks the lowest death rate from diarrheal diseases, under two years of age, the rate being 29.1. The best previous rate was 37.73. The attendance at the infant welfare stations showed an increase of 45.1 per cent as compared with the attendance in 1923.

The correction of physical defects in school children increased 82.4 per cent as compared with the rate for 1923. Thorough physical examinations of children in the kindergarten and first grade classes of the public, parochial and private schools of the city were instituted during this year.

It is possible that the great improvement in child health noted in the city during the year was in considerable measure due to the change in policy whereby a continued course of instruction, both didactic and clinical, was given to the doctors and nurses of the department of health.—*Chicago's Health*, March 3, 1925.

Tuberculin Tests—Only during the first year of life does a positive tuberculin reaction signify active tuberculosis. In the second or transitional year, while a positive reaction must be viewed with great respect, it does not necessarily, but probably does, signify an active lesion.

Following this period, a negative reaction means much, but a positive reaction indicates only the presence of a tuberculous focus, not the presence of disease. The exceptions in which a negative tuberculin reaction may be obtained are the following: in acute infections, such as measles, tuberculous meningitis, acute generalized or miliary tuberculosis, the terminal stage of chronic tuberculosis and in cachectic states. This has been explained as a condition of "antibody exhaustion," as an excess of antigen which has used up all available antibodies or a depressed or abnormal state of the body in which there is no characteristic tissue response (Krause).

The purpose of the tuberculin tests is to furnish the following data: (1) The presence of focal reaction; (2) the exclusion of active disease; (3) the degree of tuberculin sensitiveness.

Briefly, the Pirquet test is satisfactory and of great practical value in determining the presence of infection, but is not as sensitive as the intracutaneous or subcutaneous tests which give a higher percentage of positive reactions. —Pulmonary Tuberculosis in Childhood, Albert J. Bell, *Arch. Pediat.*, Feb., 1925.

When Does the Anterior Fontanelle Close?—Owing to the many and varied misconceptions of mothers regarding the anterior fontanelle, and the number of superstitions based on this lack of knowledge, the observations on the time of closure made at the St. Pancras, London, Infant Welfare Centers should be of interest to child welfare workers in the field.

The earliest date at which the fontanelle was found to be closed was in a breast-fed child of 10 months who had cut the two lateral incisors. The age at which most cases were found to be closed was at or before eighteen months. Six of the children at this age had marked rickets. Of 100 case papers investigated, 73 per cent showed the anterior fontanelle was closed at

18 months and only 27 per cent after that period. After 18 months of age the delay in closure appeared to be associated with a variety of conditions, chiefly with rickets, but also bronchitis, whooping cough, or other infectious diseases. Seven children were observed with patent fontanelles after two years of age. Marked rickets was present in all of these.—Stella Churchill, *Med. Off.*, Feb. 28, 1925.

Helping the Physically Defective School Child—My childhood was spent in the country, and in the school of this experience many things were learned that in no wise differ from some which are now taught seemingly as recently discovered truths. For example, late each fall the hogs that were marked for slaughter were gathered in from the fields, where they had been permitted to shift for themselves, placed in more restricted quarters, protected from the weather and given fresh running water, clean bedding and adequate food. It is remarkable how quickly the hogs responded to the effects of cleanliness, food, and rest, and rapidly increased in weight. These animals were "free to gain."

Much of the modern knowledge of treating the sick and feeding the well is based on observation made on animals in the laboratory and applied to humans. The application of the principles employed in fattening animals to the treatment of malnourished children is now a matter of common experience. Unfortunately, human beings may not be controlled so easily and so readily as is the case of animals. Therefore, the experience in the Rochester schools should be of value to other communities seeking to improve the condition of the physically defective children in the public schools.

When this work was first started the selection of the members of the special class, and their care, instruction and training, differed in no great particulars from the usual open-air class procedure. This method was continued for two semesters. The average gain of normal for 47 children comprising the two classes was 163 per cent. Later, a different plan was worked out for the next term coincident with the beginning of nutrition classes in other schools of the city modeled after a plan outlined by W. R. P. Emerson. The type of children admitted to the class was not changed, but the procedure was an adaptation of Emerson's idea to pupils who were not "free to gain," in part as follows:

The children first chosen were from members of previous classes who had failed to do well; those found physically unfit on routine school examination; those who were backward in school believed to be due to physical causes; and those recommended by physicians.

Before a child was enrolled in the class the mother or guardian agreed to attend the weekly meetings when objects of the class would be discussed and children rated according to gain in weight.

The children were taught in one room by one teacher, who made regular visits to the home to determine the extent of coöperation of the child and parents and to give instruction when needed in hygienic rules.

The school work was limited whenever it was thought desirable. Extra curriculum work and such extra work as Boy Scouts' meetings and music lessons were omitted. In most instances it was found desirable to have these children stop other activities such as helping in household tasks and delivering papers, etc. Exercises of any excessive nature were discouraged, but a twenty minute setting-up exercise was given to the pupils once a week by the teacher herself. In addition, these children were required to take street cars to and from school whenever the distance was great enough to tire them and money for this purpose was furnished when necessary.

The parents and the children were given instruction in the underlying principles of good nutrition.

Once a week children, parents and the teacher met and reviewed the accomplishments of the preceding seven days.

The initial physical examination was supplemented by periodic examinations of those who did not make adequate gains, including X-ray, Wassermann, and urine examinations.

From January, 1921, to January, 1923, the average percentage gain of normal for the 4 classes held during this period was 307 per cent as compared with 163 per cent with the usual open-air class routine.

A recent report on Malnutrition in Children of School Age, by Charles S. Macdougall of Toronto, based on observations made of 370 patients who attended the Nutritional Clinic of the Hospital for Sick Children during the period October 1, 1919, to October 1, 1924, gave mismanagement as the cause in 190, or 51.3 per cent. Based on Dr. Macdougall's findings, which are in conformity with the observations of other workers in this field, it would appear that the improvement of the second plan over the first adopted for the treatment of these children in Rochester schools may have been due in large measure to the determined effort to and the success in securing the coöperation of the parents.—The Management of the Physically Defective Child in the Public Schools, Paul W. Beaven, *Arch. Pediat.*, Feb., 1925.

Acidification of Milk with Vinegar in Infant Feeding—Investigations by a number of observers show that the buffer value of cow's milk is higher than that of human milk, and consequently neutralizes a larger amount of the hydrochloric acid of the stomach. The effect of this action is to interfere with the activity of the gastric enzymes. By the addition of an acid to cow's milk its excess buffer salts may be counteracted and its digestibility made to simulate more nearly that of human milk. Various acids have been used for this purpose including hydrochloric, lactic, and citric acids. In searching for an acid which in itself or whose combination products with milk is easily utilized in the quantity necessary to produce the ideal fortified acid value to the mixture, produces fine and flocculent curds, is acceptable to the infant, is inexpensive, available, and safe as an article for use in the kitchen, dilute acetic acid in the form of ordinary household vinegar was adopted.

The ratio of vinegar and milk that gave most constant satisfactory results was 1 ounce (30 c.c.) of vinegar to 15 ounces (450 c.c.) of cow's milk, or the proportion of about one common teaspoonful of vinegar to each 3 ounces of milk. Hydrogen-ion concentration of the mixture was about pH 4.2 which ratio was used until about the tenth month of age, after which in healthy infants the vinegar was gradually replaced by sweet milk. The taste is agreeable with a faint apple cider flavor.

The vinegar milk was given undiluted, except to infants younger than 2 months who received 4 ounces (120 c.c.) of water or gruel in the total daily feeding. Corn syrup diluted with an equal volume of water was added in the amount of 1 ounce (30 c.c.) of the diluted syrup to the pint of vinegar milk. The daily amount of the diluted syrup seldom exceeded 1½ ounces (45 c.c.) and this was reduced after cereal feedings were begun.

Some 40 infants, chiefly of hospital and dispensary type, were under observation on vinegar milk mixtures from periods of 1 to 6 months. In no instance was it found necessary to change the type of feeding. Their general appearance, contentment, nutrition, musculature and rate of growth compared favorably and in general paralleled those on lactic and citric acid mixtures. In other words, the clinical results of vinegar milk feeding compare favorably with those of other types of acidified milk.—Berman S. Dunham, *Am. J. Dis. Child.* (Feb.), 1925.

Hygiene of the Nose and Naso-Pharynx—The function of the nose is to warm, moisten and filter the air in breathing. Under the healthy conditions of a simple open-air life these functions are ordinarily well performed, but among those living in the circumstances of modern life catarrhal troubles are common.

As soon as the child is old enough he should be taught how to blow the nose. The proper method is to close one nostril with the finger and to blow steadily and strongly down the other, and repeat the process through the opposite nostril. "If a child cannot blow the nose properly, it is better even that he should sniff and swallow stagnant secretion than leave it in the nostrils." Handkerchief drill in school should be more generally adopted.

In infants and young children with nasal discharge, 20 or 30 drops of warm normal saline solution may be dropped down each nostril with a fountain pen filler while the head is thrown back. The infant will not be choked if not more than 30 drops is used at a time. In children over 6 or 7 years of age the effect is best obtained by washing out the nasal passages. Despite the controversy over this procedure, it does relieve and cure many cases of nasal and naso-pharyngeal catarrh, if used with simple precautions. The solution should be slightly above the body temperature and must never be used while there is a raw surface resulting from an operation until the "sticky" stage has been reached. Plain water is hypotonic and damages the epithelial cells.

The best instrument is a 2 oz. india rubber ball with a short firm nipple of the same material moulded in one piece (ear syringe). The patient fits the syringe to one nostril, inclines the head forward and breathes deeply through the open mouth while he slowly squeezes the bulb empty. The solution trickles out by the opposite nostril. The process is repeated through the other nostril and then the nose is generally blown as already described. A child 6 or 7 years of age can easily do this for himself, which is better, for he immediately relaxes the pressure on the bulb if he gags. Particular care must be exercised not to close both nostrils at this stage, "or a cracking may be felt in the ear, and it is in this way that the ears may become infected." The good results from this procedure in case of catarrh are definite and its regular use through the winter months serves as a decided preventive in the case of individuals susceptible to colds.—*Lancet*, Feb. 14, 1925.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN *

Gorgeous and Compelling Backgrounds—Colored papers of varied designs, manufactured for use by window dressers, may be used to advantage by health workers—for window or exhibit booth background; as a background or mat for notices, placards or posters on bulletin boards or on the walls of offices or clinics. Where the design or color is not too conspicuous these papers provide a distinctive background on which may be lettered meeting notices or other announcements. If you wish to see samples, ask the Secretary of the A.P.H.A., and he will send your address to the manufacturer.

How to **Please Everybody?**—If you weary of the effort to please everybody—to say the right thing at the right time in the right place—send to the Public Service Bureau, *Chicago Tribune*, Chicago, Illinois, for a copy of "Brickbats and Bouquets"—and be consoled.

"Johnny-on-the-Spot" by the Use of a Spot Map—The Detroit Department of Health "is keeping a spot map showing the exact location of all cases of pneumonia reported among infants under one year of age. Whenever there are a number of cases in a district the parents of this district will be invited to a meeting at which physicians will discuss with them methods of pneumonia prevention." We hope for a report on these meetings. The application of this idea should not be limited by a pneumonia spot map.

Portable Stand for Chart Lectures—Stands or racks for holding large charts similar to those used by the International Health Board field men are supplied by the Agricultural Extension Department, International Harvester Company, 606 South Michigan Ave., Chicago, Ill. "Stands $4.00 each; old stands $1.50 each." The "lecture charts are 70 inches long by 63 inches wide, made of a good grade of sheeting, printed in clear black letters, which can easily be read at a distance of 100 feet or more. They are arranged to set up and take down quickly and conveniently. Sets contain from 10 to 15 charts. Each set with iron stand, pointer and lecture book is packed in a canvas case. Weight, 35 pounds." The I. H. C. chart sets include a number on health, flies, and foods. Will health workers who have used this type of chart and stand please tell the editor what you think of the plan?

INFORMATION SOURCES

The Campaign Against Malnutrition, National Child Health Council. United States Public Health Service, Washington, D. C., 1923. Includes reminders of need of publicity in malnutrition work in cities of 25,000 to 30,000, with suggestions of methods and materials. Most of the information sources are indicated specifically as to what may be expected.

Health Problems in Education, Report of the Committee of the American Public Health Association, AMERICAN JOURNAL OF PUBLIC HEALTH, Oct., 1924. State laws on physical education and medical inspection. Manuals or syllabi of courses published by various states and some cities, and bibliography on Health Education.

Correlation of Departments in a Health Program, by A. E. Richardson. *Journal of Home Economics*, 17:73-75, Feb., 1925. Health education program at Iowa State College of Agriculture.

Helping to Vitalize Health Teaching, by Juliet Bell. Michigan Public Health, 12:361-74, Nov., 1924. Illustrated by posters by Michigan Department of Health.

International Year Book Number of *Editor and Publisher* includes lists of daily papers in North America, with circulation, editors, and other officials; books on many phases of journalism and advertising; syndicates; news services; and much other information. *Editor and Publisher*, 63 Park Row, New York, N. Y. $4.00 a year.

* Please address questions, samples of printed matter, criticism of anything which appears above, etc., to Evart G. Routzahn, 130 East 22d St., New York City.

Library Bulletin, American Red Cross, Washington, D. C. Free. A weekly mimeographed bulletin of "interesting articles in the latest magazines" grouped under Red Cross, Nursing, Nutrition, Health, Social Welfare, Child Welfare, etc.

New Kind of Trail (A), by Maude Parry. *American Girl*. Girl Scouts, 670 Lexington Avenue, New York, N. Y. Jan., 1925. Tells how 2,000 Atlanta girls—Girl Scouts, Camp Fire Girls, etc.—held a health contest which included two health examinations, awards for physical improvement, poster and jingle making, and stunts for the final "health carnival." In the same issue find "The Health Family," the prize-winning Scout stunt.

1000 and One for 1924, *Educational Screen*, 5 Wabash Avenue, Chicago, Ill. 104 pages. Free to subscribers or upon request to the A.P.H.A. A classified list of all types of non-theatrical films.

Popularizing Health Education, by Vera Jacobs. *Journal of National Education Association*, 1201 Sixteenth Street, N. W., Washington, D. C. Describes an interesting high school Honorary Health Club for "big sister" health work among classmates.

Practical Annual Report for Individual Staff Members, by Zula Morris. *Modern Hospital*, 24:56-57. Jan., 1925.

Preliminary Report: International Golden Rule Sunday Observance, 1924. C. D. Morris, Publicity Department, Near East Relief, 151 Fifth Avenue, New York, N. Y. 24 pages. Illustrated. Free. Very interesting to publicity workers for details of an enormous publicity campaign.

Report of the Committee on Education, Conference on Street and Highway Safety, Department of Commerce, Washington, D. C. 23 pages. A carefully developed review of the essentials in school and public highway safety education. There are seven similar reports for those interested in highway safety.

Teach Health Games to Children Waiting in Clinics, by Fannie Marie Whitman. *Nation's Health*, 6:747-749. Nov. 15, 1924. Busy, happy youngsters at play learn the fundamentals of health as they wait their turn for medical attention in up-to-the-minute institutions. Three illustrations.

Teaching Dramatically, by S. Booth, R.N. *Trained Nurse and Hospital Review*, 74:30-35, Jan., 1925. Project method in home hygiene classes.

Tricks of the Trade. *Survey*, 53:479, Jan. 15, 1925. Methods of teaching health, the Pittsburgh milk well, the St. Louis gypsy, etc.

The Way of Health, Saskatchewan Department of Health, Regina, Saskatchewan. Illustrated. Description of devices and models, some of which can be duplicated elsewhere. 30 pages. Probably free.

Why Not Picture Bulletin Boards for Patients Unable to Read? *Modern Hospital* 24:47-48, Jan., 1925. A stunt of value to patients—a job for volunteers—material for publicity.

"Picture Publicity"—"Human interest is the significant requirement of the photograph. Pictures are bait to catch the reader's attention and unless they live, the reader will conclude that the article which they accompany is dead. The lay eye is not drawn to a vista of unoccupied ward beds, however faultless the technique in their making. If there peered from among the pillows a roguish-eyed pickaninny with ebony face in sharp contrast to the spotless sheets, or a head with a crooked smile emerging from sundry bandages, the picture would have a center of attraction irresistible to the eye. Nor is there any appeal to the casual reader in a lonely nurses' sitting room or an operating room with catalogue equipment. Group some nurses about piano and fireplaces, strap a patient on the operating table with gowned and masked attendants in position, and there are two photographs that will challenge attention. Pictures which depict pain or suffering are, of course, bad taste as well as poor psychology. Those containing children are most universal in their appeal.

"Many hospital executives with irritating disregard for printing requirements face all publicity demands fortified by a single and battered half-tone cut of the institution. This, upon request for illustrations, they confidently and indiscriminately dispatch to magazines or newspapers; later, when it is returned unused, they express wonder. Ten minutes with a book on photographic reproduction would convince them of the absurdity of their expectations. The quality and finish of print paper is the gauge for half-tone screen measurement. It were better for the superintendent to retain his cherished cut for the exclusive use of the hospital and send good photographs; magazines and newspapers will finance their own engraving."—*Mod. Hosp.*, 24:47, Jan., 1925.

LAW AND LEGISLATION

JAMES A. TOBEY, LL.B.

The Institute for Government Research—In order that sanitarians may be apprised of the organization and scope of the Institute for Government Research of Washington, D. C., under the auspices of which a comprehensive survey of federal health activities is now being made, the following description is presented.

The Institute for Government Research was organized in 1916 by a group of prominent individuals who were convinced that there should be at the seat of government an independent, non-political agency which could consider the problems of public administration, particularly those of the federal government. Since its creation the Institute has been actively engaged in studying the administrative organization of the various executive departments and their subordinate bureaus, and in the promotion of improvements in the procedure and administrative set-up of the government. Its greatest accomplishment has been, perhaps, the stimulation of a national budget system, which has now been in effective operation for several years.

Other problems with which the Institute has been directly concerned have comprised: the general reorganization of the administrative branch of the government; improvement in the personnel system, and improvement in administrative procedure. These efforts have been aimed at the elimination of waste motion in government procedure and the securing of increased efficiency. Studies of purchasing and of government accounting and reporting have accordingly been conducted, in addition to investigations of financial administration and personnel procedure. These studies have been issued in book form and are available for purchase by those interested. Other studies on administration, including one on the Statistical Work of the Government, are under way.

In the volume on the reorganization of the administrative branch of the national government, written in 1923 by Mr. W. F. Willoughby, the director of the Institute and a well-known expert on political science, there is a proposal for a separate Department of Public Health. It would embrace such distinct existing services as the Public Health Service (Treasury Department), the Division of Vital Statistics of the Bureau of the Census (Commerce Department), the enforcement of the pure food and drug laws (now under the Bureau of Chemistry in the Department of Agriculture), the inspection of meat intended for shipment in interstate commerce (now performed by the Bureau of Animal Industry of the Department of Agriculture), and a number of other functions, such as the public health activities of the Bureau of Immigration (Labor Department), the Superintendent of Prisons (Department of Justice) and certain institutional services. Such a department was strongly recommended by the President's Commission on Economy and Efficiency in 1912, and it will be remembered that an unsuccessful endeavor was made at that time to induce Congress to create it. Mr. Willoughby points out that the work of the Public Health Service alone is almost on a departmental scale. As previously mentioned, the proposition for more effective correlation of existing federal health agencies is now being restudied in an intensive manner and the Institute plans to issue a book on the subject in the fall of this year. This volume will contain a complete description of the present public health activities of the national government, with some suggestions for their practical coördination. It will not necessarily advocate a new department of health, as such an advance, while ideal, may not be expedient at this time.

Thirty-four monographs, giving in detail the history, activities, organization, publications, and other administrative information regarding as many federal services have been issued by the Institute. While many of these do not have a direct interest to sanitarians, except in so far as such officials are interested in the government in a general way, several of the studies will be found of great value and significance. Chief of these is the excellent

monograph (No. 10) on the Public Health Service, by L. F. Schmeckebier. This is the most complete outline of the development and the work of this important bureau now in existence and should be in the possession of every sanitarian who wishes to know what the Public Health Service is doing and how it is doing it. A similar description of the Children's Bureau (No. 21) is now in press. Other monographs which sanitarians will find of interest include: The Federal Board for Vocation Education (No. 6); the Employees' Compensation Commission (No. 12); the Bureau of Education (No. 14); the Women's Bureau (No. 22); the Bureau of Internal Revenue (No. 25); and the Bureau of Immigration (No. 30). A statement prepared by the Institute concerning the Bureau of Labor Statistics has been issued by that bureau as its Bulletin No. 319.

In process of preparation are studies of the Bureau of Animal Industry, Bureau of Biological Survey, Bureau of Agricultural Economics, Extension Service, Office of Indian Affairs, and Veterans' Bureau. These monographs do not attempt a critical analysis of the work of the various bureaus, but to describe their activities in a thorough manner. They may be secured at a moderate price from the Institute for Government Research, 26 Jackson Place, Washington, D. C., which will furnish a list of them, or they may be purchased through the Book Service of the American Public Health Association.

Also connected with the Institute is a Bureau of Public Personnel Administration, which was established three years ago to: (1) serve as a clearing house for existing information regarding matters relating to personnel administration in the public service of cities, counties, states, and the nation; (2) to develop and improve methods of personnel administration through original investigations and experiments; and (3) to publish the results of its work in an effective way. It issues a monthly bulletin, the November, 1924, number of which contained suggested tests for food inspectors, and the February, 1925, number standardized tests in bacteriology.

Investigation of Ethyl Gas—The special session of the Senate of the 69th Congress which was in brief session for the purpose of considering executive appointments and treaties also had before it a resolution of interest to sanitarians. This resolution (S. Res. 37) provided for an investigation of the extent of the use of leaded or ethylated gasoline in interstate commerce and to what degree such use is deleterious and requires to be restricted or forbidden. No action was taken on this matter and it will be brought up again when Congress convenes in December.

The dangers to health from the use of ethyl gasoline have been described in this JOURNAL and other scientific magazines. A group of influential sanitarians, including Drs. Haven Emerson and D. L. Edsall, and Professor Yandell Henderson, are interested in this matter and have requested the writer to prepare a bill which will deal with it, so that the subject will be squarely before the next session of Congress. Persons having ideas on this topic should communicate them to one of the parties mentioned. The matter goes beyond tetraethyl lead in gasoline, moreover, as there are many other poisonous substances which enter interstate commerce. Examples are caustic lye, against which the American Medical Association has been attempting to secure legislation, paints containing benzol, cheap varnishes with methyl alcohol in them, and numerous other dangerous chemicals and poisons. The federal government regulates interstate traffic in foods and drugs, prohibits filled milk, and controls biological products; so it would seem as if there were no reason for not considering this other matter, unless it be one of economy.

Act to Prevent Venereal Diseases in the District of Columbia—The law (Public No. 494) passed by the 68th Congress for the control of venereal diseases in the District of Columbia has a number of interesting provisions. The sixth section, for instance, provides that whenever the health officer has reasonable grounds to believe that any person is afflicted with a venereal disease in a form likely to be a source of infection to others, and said person refuses to submit to a medical examination, it is the duty of the health officer to file an affidavit before any judge of the police court or a court having criminal jurisdiction, setting out the facts in the case. It is then the duty of the judge to issue an order in writing directed to the person accused, to appear before the health officer for examination.

The object of this section is apparently to provide for due process of law, but the wording of the law seems to make mandatory the issuance of the court order, without providing for a hearing. Statutes authorizing examina-

tion of persons on reasonable suspicion have been upheld by the courts in several states, though the moot point is what is reasonable suspicion?

Other provisions in this law for the District of Columbia require reporting of cases of the venereal diseases to the health officer, prohibition of sale of remedies for the diseases except on a physician's prescription, authorization to the health officer to make regulations for the control of the venereal diseases, and prohibition of employment of an infected person in certain trades. Prostitutes and persons convicted of sexual crimes are presumed to be infected, according to the terms of the act, and there are a number of other provisions.

Medical **Certification for Marriage**—Male applicants for marriage licenses must produce a certificate from a physician showing them to be free from venereal diseases, according to the laws of seven states, Oregon (1913), North Dakota (1913), Wisconsin (1913), Alabama (1919), North Carolina (1921), Wyoming (1921), and Louisiana (1924). Such a law was passed in Washington in 1909 but repealed after it had been in effect only a few months. Since 1901, 37 legislatures have refused to pass 90 proposals for such laws.

An account of the administration of the Wisconsin law, which was revised in 1915, after it had been upheld by the Supreme Court of the state in the previous year, is given in some detail by Mr. Fred S. Hall in a pamphlet recently issued by the Russell Sage Foundation. This is a valuable compendium of information and will be useful to any sanitarian who is interested in considering or promoting a similar law. There is a lesson in the defects of the text and operation of the Wisconsin statute, knowledge of which may be profitable to others.

The law requires all male persons to be examined for venereal disease within fifteen days prior to making application for marriage. Such examinations are to be made by "the application of the recognized clinical and laboratory tests of scientific research, when in the discretion of the examining physician such clinical and laboratory tests are necessary." The state laboratory must make tests free of charge on request. The examiners must be licensed physicians and are entitled to a maximum fee of two dollars. Indigents are entitled to a free examination by a county physician.

The author concludes from his study of the workings of this law that it has had a valuable educational effect, whatever its other defects may be. It has also had some effect in preventing the spread of the venereal diseases through marriage. The more important defects of the law are summarized by the writer as: the fact that it denies a marriage license to men who have venereal disease in a non-communicable form; the failure adequately to define the examination procedure; inadequacy of the fee permitted so as to insure complete examinations; failure of the certificate to outline exactly the type of examination given; and lack of general supervision over the law by the State Board of Health. The law was drafted and promulgated originally without the cooperation of the organized medical profession and has never since had its active support, though a majority of the physicians asked stated that they considered the general principles of value and efficacy. The state laboratory service is somewhat but not sufficiently used for examinations.

The author believes that the fact that the law does not apply to women is not a serious drawback, nor does he put much faith in the criticism that all of the examinations should be made by public officials. He considers the most serious present defect to be the complacent spirit with which those interested in the subject are content to let the law remain as it is, replete with defects and ambiguities. It was, in fact, narrowly saved from repeal in 1923.

This whole study is well worth perusal, as only the more salient points can be abstracted here.

Court Decision on Feeding Garbage to Hogs—Mr. Edward D. Rich, Director of the Bureau of Engineering of the Michigan Department of Health, has sent to the JOURNAL some interesting information regarding a court decision granting an injunction against the operation of a piggery by the city of Lansing. Although this decision was handed down by a state circuit court and so is subject to appeal and thus is not final, it contains, as Mr. Rich suggests, a lesson to municipal officers.

The piggery was established by the city of Lansing in a neighboring county in order to provide facilities for disposing of garbage. At the time its location was proposed, local inhabitants attempted by means of court action to

prevent its operation, but the petition for an injunction was denied, as no nuisance had as yet been created. According to the facts given by Mr. Rich, the feeding to over 1,000 hogs, the can washing, and preliminary disposal of the worked over garbage after treatment with lime, all caused no objectionable odors. When the old piles were spread for plowing, however, highly objectionable odors were released and 68 witnesses appeared in court to describe these odors in a vivid manner. The court granted an injunction on the ground that the neighbors had been damaged in the enjoyment of their homes and that the value of their property had been decreased.

From the facts, this was evidently a nuisance, though probably not a public health one, as there was undoubtedly little detriment to the physical welfare of the people. There are other kinds of nuisances besides public health ones, though, and conditions which impair comfort or injure property and land values may be such. As Mr. Rich points out, "even with the best of operation, some slight odors and objectionable conditions are bound to arise from a piggery and the greatest care should be used in selecting a location where these objections cannot be fastened upon by the neighbors to compel the removal of the plant." We shall endeavor to report the outcome of the appeal in this case.

Miscellaneous—The Federal Maternity and Infancy Act has been accepted by the legislature of Vermont, according to a News Summary of the U. S. Children's Bureau. This brings to 42 the total number of states which have accepted the Act.

The U. S. Children's Bureau has revised and reissued recently a chart (No. 3) entitled "A Tabular Summary of State Laws Relating to Public Aid to Children in Their Own Homes in effect January 1, 1925, and the Text of the Laws of Certain States."

A paper on "The Correlation of Federal Health Work" will be presented to the Section on Public Health and Preventive Medicine of the American Medical Association at its annual meeting in Atlantic City this spring. The paper by Dr. Linsly R. Williams will come on the morning of Wednesday, May 27.

The Supreme Court of Minnesota has upheld the minimum wage law of that state, as it applies to minors. (Stevenson v. St. Clair, 203 N. W. 629.)

CONVENTIONS

This calendar is published through the coöperation of the National Health Council, 370 Seventh Avenue, New York City. The Council will be glad to answer promptly any written or telegraphic inquiries regarding meeting dates in order to avoid conflicts.

May 4, American Society of Clinical Investigation, Washington, D. C.

May 4–5, American Climatological and Clinical Association, Washington, D. C.

May 4–5, American Association of Genito-Urinary Surgeons, Washington, D. C.

May 4–6, American Gynecological Society, Washington, D. C.

May 4–6, American Pediatric Society, Washington, D. C.

May 4–6, American Surgical Association, Washington, D. C.

May 4–6, American Laryngological Association, Washington, D. C.

May 4–6, American Dermatological Association, Washington, D. C.

May 4–9, New England Health Institute, Portland, Maine.

May 5–6, Congress of American Physicians and Surgeons, Washington, D. C.

May 5–6, American Society of Tropical Medicine, Washington, D. C.

May 5–6, American Orthopedic Association, Washington, D. C.

May 5–6, American Ophthalmological Society, Washington, D. C.

May 5–7, American Association of Physicians, Washington, D. C.

May 5–7, American Neurological Association, Washington, D. C.

May 7, American Psychopathological Association, Washington, D. C.

May 8–11, American Association for the Study of the Feeble-Minded, Raleigh, N. C.

May 12, New York State Association of Public Health Laboratories, Syracuse, N. Y.

May 12–15, American Psychiatric Association, Richmond, Va.

May 14–16, Canada Tuberculosis Association, Montreal, Canada.

May 15–16, American Academy of Political and Social Science, Philadelphia, Pa.

May 20–23, National Convention of Girl Scouts, Boston, Mass.

May 21–22, American Therapeutic Society, Atlantic City, N. J.